

ADDITIONAL NOTES ON THE ERIOCAULACEAE. LXVIII

Harold N. Moldenke

PAEPALANTHUS VESTITUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 150--151. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 128, 150--151, & 292. 1903; Prain, Ind. Kew. Suppl. 3: 127. 1908; Alv. Silv., Fl. Mont. 1: 415. 1928; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971; Moldenke, Phytologia 31: 385 (1975) and 35: 257. 1977.

The type of this species was collected by Peter Clausen "auf dem Gipfel des Itabira", Minas Gerais, Brazil, and is no. 151823 in the Reichenbach f. herbarium in Vienna, where it was photographed by Macbride as his type photograph number 29997. Ruhland (1903) cites only this original collection and comments that the "Species, praesertim foliorum indumento insignis, P. undulato Ruhl. proxima esse videtur. Flores ♀ quam ♂ in capitulis examinatis plures". Silveira (1928) cites A. Silveira 473 from the same Pica de Itabira locality, collected in 1907. Belém encountered the plant on humid campos and describes it as 20 cm. tall.

Citations: BRAZIL: Espírito Santo: Belém 3838 (N, Z). Minas Gerais: P. Clausen s.n. [1843; Macbride photos 29997] (B--isotype, N--photo of type, W--photo of type, Z--isotype).

PAEPALANTHUS VESTITUS var. CAULESCENS Moldenke, Phytologia 31: 232--233. 1975.

Bibliography: Moldenke, Phytologia 31: 232--233 & 385. 1975.

Citations: BRAZIL: Bahia: Harley, Renvoize, Erskine, Brighton, & Pinheiro in Harley 15472 (Z--type).

PAEPALANTHUS VIGIENSIS Moldenke, Phytologia 3: 170--171. 1949.

Bibliography: Moldenke, Phytologia 3: 170--171 (1949) and 4: 207. 1953; E. J. Salisb., Ind. Kew. Suppl. 11: 176. 1953; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971.

Additional citations: BRAZIL: Pará: Black & Ledoux 50-10568 (Z); Murça Pires 1398 (Be--36529--isotype), 6046 (Z).

PAEPALANTHUS VILLIPES Moldenke, Phytologia 3: 171--172. 1949.

Bibliography: Moldenke, Phytologia 3: 171--172 (1949) and 4: 207. 1953; E. J. Salisb., Ind. Kew. Suppl. 11: 176. 1953; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971.

Recent collectors have encountered this species on artificial campos, flowering in July and August.

Additional citations: BRAZIL: Pará: Black 48-3278 (Be--37770--

isotype); Black & Smith 56-18824 (Bm); Ducke 12569 (Bs); W. A. Egler 336 [Black 19679] (Z), 1103 [Herb. Mus. Goeldi 23883] (Mm); Egler & Raimundo s.n. [W. A. Egler 792; Herb. Mus. Goeldi 23631] (Mm); Goeldi 15066 [Herb. Mus. Goeldi 5066] (Bs); Herb. Mus. Goeldi 9800 (Bs); Murça Pires 4082 (Z); N. T. Silva 149 (Be-12554).

PAEPALANTHUS VILLOSULUS Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 400—401. 1863.

Synonymy: Dupatya villosula (Mart.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya villosula Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Paepalanthus villosus Mart. apud Alv. Silv., Fl. Mont. 1: 230 [as "villosus"]. 1928 [not P. villosus (H.B.K.) Kunth, 1969].

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 280, 400—401, & 507. 1863; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 22. 1888; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 201, 204, 284, & 292. 1903; Alv. Silv., Fl. Mont. 1: 230, 231, & 415. 1928; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 40. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 31, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Rennó, Levant. Herb. Inst. Agron. Minas 71. 1960; Moldenke, Phytologia 20: 304. 1970; Moldenke, Fifth Summ. 1: 168 & 486 (1971) and 2: 592 & 959. 1971; Moldenke, Phytologia 30: 42 & 111 (1975) and 33: 48. 1976.

This species is based on a Martius unnumbered collection from "in montibus altioribus" in Minas Gerais, Brazil, and deposited in the Munich herbarium where it was photographed by Macbride as his type photograph number 18732. Körnicke (1863) also cites Glaziou 19965 and Wied-Neuwied s.n. from the same state, the Glaziou collection from campos near Diamantina. It has been collected in flower in April and bears considerable habitat resemblance to P. bromelioides Alv. Silv., P. cacuminis Ruhl., P. corymboides Ruhl., P. corymbosus (Bong.) Kunth, P. hydra Ruhl., P. lanceolatus Körn., P. laxifolius Körn., P. melaleucus (Bong.) Kunth, P. pauciflorus Körn., P. rigidulus Mart., P. spixianus Mart., P. tuberosus (Bong.) Kunth, and P. vellozioides Körn. Silveira (1928) cites A. Silveira 780 from the Serra Geral, Minas Gerais, collected in 1926.

Citations: BRAZIL: Minas Gerais: Martius s.n. [in montibus altioribus prov. min. general.; Macbride photos 18732] (B—isotype, Mu—type, Mu—isotype, Mu—isotype, N—photo of type, W—photo of type, Z—isotype), s.n. [Habit. in campis elatis arenosis distr.

diamantium variis locis] (Mu); Mello Barreto 9497 [Herb. Jard. Bot. Belo Horiz. 23736] (N). State undetermined: Herb. Zuccarini s.n. [Brasilia] (Mu). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicker (B).

PAEPALANTHUS VIRIDIPES Alv. Silv., Fl. Mont. 1: 115—116, pl. 71. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 115—116 & 415, pl. 71. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 200. 1938; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 71. 1928.

This species is based on A. Silveira 831 from "Sub rupibus inter Itacambira et Juramento", Minas Gerais, Brazil, collected in July, 1926, and deposited in the Silveira herbarium. On page 415 of his work, Silveira (1928) gives "Itacambira" as the tupe locality. Thus far, the species is known only from the original collection.

PAEPALANTHUS VIRIDIS Körn. in Mart., Fl. Bras. 3 (1): 355—356. 1863.

Synonymy: Dupatya viridis (Körn.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya viridis Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Paepalanthus virides Körn. apud Alv. Silv., Fl. Mont. 1: 415, sphalm. 1928.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 355—356 & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 153, 162, 284, & 292. 1903; Alv. Silv., Fl. Mont. 1: 415. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 31, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Phytologia 4: 207. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, 329, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Moldenke, Fifth Summ. 1: 168 & 487 (1971) and 2: 592 & 959. 1971; Moldenke, Phytologia 30: 35 & 37 (1975) and 35: 125. 1977.

This species is based on G. Gardner 2331 and 2332, both from an undesignated locality in Piauí, Brazil, probably deposited in the Munich herbarium. Macbride photographed a duplicate of G. Gardner 2331 in the Geneva herbarium as his type photograph number 25178. Ruhl. (1903) cites only the two original collections, but Silveira (1928) cites an "Ubi ? N. 626", probably from Minas Gerais.

Irwin and his associates describe this species as "plants 7 cm. tall, heads light-brown" and found it growing in wet campos in an

area of cerrado interspersed with wet rocky campos, at 950 meters altitude, flowering and fruiting in February. Some of the Irwin, Reis dos Santos, & Fonsêca 23353 material was originally distributed to some herbaria under the mixed label of Irwin, Onishi, Fonsêca, Reis dos Santos, & Ramos 25353 on which the plant was described as "a slender twining vine to ca. 2 m. long. Corolla yellow-green" — the description being an obvious clear indication of mixed labels.

Material of P. viridis has been misidentified and distributed in some herbaria as P. lamarckii Kunth and P. tortilis (Bong.) Mart., species to which it is obviously closely related and very similar in habit. It also closely resembles P. cearensis Ruhl.

Additional citations: BRAZIL: Minas Gerais: Irwin, Reis dos Santos, & Fonsêca 23353 (N, Z). Pernambuco: Pickel 2772 (N, S). Piauí: G. Gardner 2331 [Macbride photos 25178] (B—cotype, N—photo of cotype, W—photo of cotype), 2332 (B—cotype). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

PAEPALANTHUS VIRIDULUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 165. 1903.

Synonymy: Paepalanthus cephalopus Alv. Silv. & Ruhl. ex Ruhl. in Engl., Pflanzenreich 13 (4-30): 165. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 164, 165, 289, & 292. 1903; Ruhl. in Beauverd, Bull. Herb. Boiss., ser. 2, 8: 293. 1908; Prain, Ind. Kew. Suppl. 3: 126. 1908; Alv. Silv., Fl. Mont. 1: 127, 404, & 415. 1928; Moldenke, Known Geogr. Distrib. Erioc. 11, 16, 46, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 82, 89, 208, & 212. 1949; Moldenke, Résumé 96, 103, 486, & 490. 1959; Moldenke, Résumé Suppl. 1: 6, 20, & 25. 1959; Moldenke, Fifth Summ. 1: 168 & 579 (1971) and 2: 959. 1971; Moldenke, Phytologia 26: 246 (1973), 29: 326 (1974), and 30: 340. 1975.

This species was based by Ruhland (1903) on two collections: (1) H. de Magalhães 1374, collected in the Serra de Ibitipoca in June, 1894, and (2) Schwacke 12305, collected "an feuchten, sandigen Stellen unter Felsen", also in the Serra de Ibitipoca, at 1070 meters altitude, Minas Gerais, Brazil, deposited in the Berlin herbarium. Magalhães 1374 is also the type collection of P. cephalopus, also deposited in the Berlin herbarium.

Of P. viridulus Ruhland (1903) says "Species habitu P. viridi Koern. similis, sed multis notis ab eo differt". For P. cephalopus he notes "Species habitu illi subgeneris Stephanophylli (cfr. Leiothrix) similis, graciliter late repit." He separates these taxa as follows:

"Caulis paullum elongatus; folia tenui-membranacea

Sepala floris ♀ obtusa.....P. filiosus

Sepala floris ♀ acutiuscula.....P. viridulus

Caulis perbrevis; folia fere rigidulo-membranacea.P. cephalopus

As P. viridulus Silveira (1928) cites A. Silveira 342 from the same Serra de Ibitipoca, and for P. cephalopus he cites Magalhães 238, also from Serra de Ibitipoca, both in the Silveira herbarium.

Citations: BRAZIL: Minas Gerais: H. de Magalhães 1374 (B—cotype, B—cotype, Z—cotype); Schwacke 12305 (B—cotype, Z—cotype).

PAEPALANTHUS VISCOSUS Moldenke, Bull. Torrey Bot. Club 68: 70. 1940.

Bibliography: Moldenke, Bull. Torrey Bot. Club 68: 70. 1940; Moldenke, Known Geogr. Distrib. Erioc. 7 & 55. 1946; Moldenke, Alph. List Cit. 1: 12 (1946) and 2: 461. 1948; Moldenke in Maguire & al., Bull. Torrey Bot. Club 75: 200. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 67 & 212. 1949; Moldenke, Alph. List Cit. 3: 702 (1949) and 4: 1072 & 1114. 1949; Moldenke, Phytologia 4: 207. 1953; E. J. Salisb., Ind. Kew. Suppl. 11: 176. 1953; Anon., U. S. Dept. Agr. Bot. Subj. Index 5: 4227. 1958; Moldenke, Résumé 77 & 490. 1959; Lindeman & Görts-van Rijn in Pulle & Lanjouw, Fl. Surin. 1 [Meded. Konink. Inst. Trop. 30, Afd. Trop. Prod. 11]: 331 & 333. 1968; Moldenke, Fifth Summ. 1: 132 (1971) and 2: 959. 1971.

The original publication of this species is sometimes cited as "1941" — the title-page date — but the number containing this paper actually was issued and distributed in the latter days of 1940. Lindeman & Görts-van Rijn (1968) cite Archer 2836 (the type collection) and "Maguire 23665" and "Maguire 24979" from Surinam.

Additional citations: SURINAM: Maguire & Stahel 24979 (S, Se—182993).

PAEPALANTHUS WARMINGIANUS (Körn.) Körn. ex V. A. Pouls., Vidensk. Meddel. Naturh. For. Kjøbenh. 40 [ser. 4, 9]: 223 & 313--321. 1888.

Bibliography: C. Müll. in Just, Bot. Jahresber. 16 (1): 770. 1888; V. A. Pouls., Vidensk. Meddel. Naturh. For. Kjøbenh. 40 [ser. 4, 9]: 223 & 313--321. 1888; Ruhl. in Engl., Pflanzenreich 13 (4-30): 223 & 292. 1903; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Phytologia 2: 374 & 381. 1947; Moldenke, Alph. List Cit. 3: 731. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 89 & 212. 1949; Moldenke, Phytologia 4: 207. 1953; Moldenke, Résumé 103, 294, 329, & 490. 1959; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 149, 160, 161, 166, & 174. 1969; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 518, 592, & 959. 1971; Moldenke, Phytologia 26: 233. 1973.

This species is based on Glaziov 5455 from Minas Gerais, Brazil, deposited in the Copenhagen herbarium, where it was photographed by Macbride as his type photograph number 22296. It should be noted that the involucre bractlets are obscurely acute and the peduncles glabrous. Poulson (1888) gives a detailed anatomical description. Ruhland (1903) merely cites "Brasilien (Glaziov)" and comments only that "V. A. Poulson...anatomicè speciem describit;

P. Oerstediano Koern. similem esse clamat".

The Mexia 5881, distributed as and previously cited by me as P. warmingianus, is actually P. comans Alv. Silv.

Additional citations: BRAZIL: Minas Gerais: Glaziou 5455 [Macbride photos 22296] (N--photo of type, W--photo of type).

PAEPALANTHUS WEBERBAUERI Ruhl. in Urb., Engl. Bot. Jahrb. 37: 519--520. 1906.

Bibliography: Ruhl. in Urb., Engl. Bot. Jahrb. 37: 519--520. 1906; Prain, Ind. Kew. Suppl. 4, imp. 1, 170. 1913; J. F. Macbr., Field Mus. Publ. Bot. 13 (363): 490, 491, & 493--494. 1936; Moldenke, Known Geogr. Distrib. Erioc. 7 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 73 & 212. 1949; Anon., U. S. Dept. Agr. Bot. Subj. Index 5: 4227. 1958; Prain, Ind. Kew. Suppl. 4, imp. 2, 170. 1958; Moldenke, Résumé 84 & 490. 1959; Soukup, Biota 2: 302. 1959; Moldenke, Fifth Summ. 1: 142 (1971) and 2: 959. 1971.

This species is based on Weberbauer 1152 and 1326, the former from "Zwischen dem tambo Yumcacoya und dem tambo Cachicachi, am Weg von Sandia nach Chunchusmayo, feuchte Plätze am Rande von Gesträuch, 1800--2200 m.....Blühend am 8. Juni", and the latter from "Ramaspata, offene, feuchte Plätze zwischen Gesträuch, 2500 m.....Blühend am 27. Juli", San Martín, Peru, deposited in the Berlin herbarium. Macbride (1936) cites only the original collections and gives the locality of the second cotype collection as "Pamaspata". Ruhland (1903) comments that the "Species P. diplobetori Ruhl. subsimilis, sed praeter cetera caule et foliis perbene ab illo distincta".

Citations: PERU: San Martín: Weberbauer 1152 [Macbride photos 10662] (B--cotype, B--cotype, N--photo of cotype, N--photo of cotype, W--photo of cotype, Z--cotype), 1326 (B--cotype).

PAEPALANTHUS WEDDELLIANUS Körn. in Mart., Fl. Bras. 3 (1): 317--318. 1863.

Synonymy: Dupatya weddelliana (Körn.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya weddelliana Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 317--318 & 506. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 184, 188, 284, & 292. 1903; Alv. Silv., Fl. Mont. 1: 192. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 31, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 89 & 212. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 148, 159--161, 174, & 186--189. 1969;

Moldenke, Fifth Summ. 1: 168 & 487 (1971) and 2: 959. 1971; Moldenke, Phytologia 26: 481 (1973) and 33: 191. 1976.

This species is based on Weddell 2927 from "in Sümpfen auf felsigem Boden bei As Lages", Goiás, Brazil, probably deposited in the Munich herbarium. Ruhland (1903) cites only the original collection and notes that the "Species mihi ignota P. specioso valde affinis esse videtur". Actually, it is one of that large group of very similar-appearing species (in the herbarium, at least): P. acanthophyllus Ruhl., P. amoenus (Bong.) Körn. [to which it seems closest in overall habit], P. bifrons Alv. Silv., P. brasiliensis (Mart.) Mart., P. ciliatus (Bong.) Kunth, P. clausenianus Körn., etc. It is known thus far only from the original collection.

Citations: BRAZIL: Goiás: Weddell 2927 (Br—isotype, N—isotype, N—photo of isotype, Z—photo of isotype).

PAEPALANTHUS WILLIAMSII Moldenke, Phytologia 2: 367—368. 1947.

Bibliography: Moldenke, Phytologia 2: 367—368, 373, & 381. 1947; Moldenke, Alph. List Cit. 4: 1132. 1949; Moldenke, Known Geogr. Distrib. Ericoc. 64 & 212. 1949; Moldenke, Mem. N. Y. Bot. Gard. 8: 89. 1963; Moldenke, Phytologia 4: 207. 1953; E. J. Salisb., Ind. Kew. Suppl. 11: 176. 1953; Moldenke, Résumé 68, 72, 103, & 490. 1959; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 148—151, 160—165, 176—179, 184—187, & 191, fig. 30, 34 A—C, 36 I & J, & 37 I & J. 1969; Moldenke, Fifth Summ. 1: 119, 126, & 168 (1971) and 2: 959. 1971.

Illustrations: Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 150, 164, 176, & 178, fig. 30, 34 A—C, 36 I & J, & 37 I & J. 1969.

This savanna species has been encountered by recent collectors at altitudes of 120—425 meters, in flower in July and from September to January, in fruit in March. Maguire and his associates refer to it as "locally abundant" at the edges of savannas, an "occasional herb" in moist places at the borders of savannas, "infrequent" in wet places, "occasional" in savannas and scrub savannas, and "rare" on sabanitas.

Additional citations: COLOMBIA: Vaupés: Maguire, Wurdack, & Keith 41846 (N); Schultes, Baker, & Cabrera 18166 (Sa), 18383 (W—2172144, Z). VENEZUELA: Amazonas: Maguire, Cowan, & Wurdack 30463 (N, Ve), 30806 (N, W); Maguire & Wurdack 34549 (N); Maguire, Wurdack, & Keith 41757 (N, N, S); Ll. Williams 15051 (F—1189141—isotype, It—isotype, W—1878072—isotype). BRAZIL: Amazônas: Frôes 33200 (Bm); Schultes & López 10336 (Be—60232, W—1997118). Pará: Ducke 8690 (Gl), 16484 (Bs); Egler & Raimundo s.n. [W. A. Egler 955; Herb. Mus. Goeldi 23629] (Mm); Frôes 29934 (Hk); Murça Pires, Black, Wurdack, & Silva 6183 (N).

PAEPALANTHUS WURDACKI Moldenke, Phytologia 9: 187—188. 1963.

Synonymy: Paepalanthus wurdackii Moldenke, Résumé Suppl. 12:

12, in syn. 1965; G. Taylor, Ind. Kew. Suppl. 14: 97. 1970.

Bibliography: Moldenke, Phytologia 9: 187—188. 1963; Moldenke, Résumé Suppl. 7: 5. 1963; Hocking, Excerpt. Bot. A.7: 455. 1964; Moldenke, Biol. Abstr. 45: 2772. 1964; Soukup, Biota 5: 194. 1964; Moldenke, Résumé Suppl. 12: 12. 1965; G. Taylor, Ind. Kew. Suppl. 14: 97. 1970; Moldenke, Fifth Summ. 1: 142 (1971) and 2: 592 & 959. 1971.

Additional citations: PERU: Amazonas: Wurdack 1081 (N—isotype, S—isotype, W—2403675—type, Z—isotype).

PAEPALANTHUS XANTHOPUS Alv. Silv., Fl. Mont. 1: 70—72, pl. 41. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 70—72 & 415, pl. 41. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 200. 1938; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 89 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 41. 1928.

This species is based on A. Silveira 589 from "In campis prope rivulum Pedra Pintada, in Serra do Cabral", Minas Gerais, Brazil, collected in June, 1910, and deposited in the Silveira herbarium. Silveira (1928) comments that the "Species capitulis magnis similitate densissime villosis et bracteis involucrentibus hirsutis extimisque longis pulchra et perbene distincta". It is known thus far only from the original collection.

PAEPALANTHUS XIPHOPHYLLUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 218—219. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 214, 218—219, & 292. 1903; Prain, Ind. Kew. Suppl. 3: 127. 1908; Alv. Silv., Fl. Mont. 1: 246. 1928; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 89 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971; Moldenke, Phytologia 26: 235 (1973) and 30: 41. 1975.

This species is based on a collection made by E. B. Sena [Herb. Schwacke 14678] in the Serra da Gansavelha, Minas Gerais, Brazil, deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 10663. The species is known thus far only from the original collection.

Citations: BRAZIL: Minas Gerais: Sena s.n. [Herb. Schwacke 14578; Macbride photos 10663] (B—type, N—photo of type, N—photo of type, W—photo of type, Z—isotype).

PAEPALANTHUS YUCCA Ruhl. ex Moldenke, Phytologia 7: 120—121. 1960.

Bibliography: Moldenke, Phytologia 7: 120—121. 1960; Moldenke, Biol. Abstr. 35: 2177. 1960; Moldenke, Résumé Suppl. 2: 5 & 15. 1960; Hocking, Excerpt. Bot. A.4: 593. 1962; G. Taylor, Ind. Kew. Suppl. 13: 98. 1966; Moldenke, Fifth Summ. 1: 168 (1971) and 2:



959. 1971.

Citations: BRAZIL: Minas Gerais: G. Gardner 5269 (B--type, Z--isotype).

PHILODICE Mart., Nov. Act. Physico-med. Acad. Caes. Leopold.-Carol. Nat. Cur. 17 (1): 16, pl. 3, fig. 1--11. 1835.

Synonymy: Philodyce Mart. apud Steud., Nom. Bot. Phan., ed. 2, 2: 320. 1841. Philodyce Steud. apud Post & Kuntze, Lexicon 431, in syn. 1904. Eriocaulon Auct. (in part) apud Stapf, Ind. Lond. 3: 90, in syn. 1930 [nor Eriocaulon Gron., 1753, nor (Gronov.) L., 1913, nor Juss., 1810, nor L., 1816, nor Mart., 1959, nor (Vell.) L. B. Sm., 1971]. Phylodoce Mart. ex J. F. Macbr., Field Mus. Publ. Bot. 11: 8. 1931. Phylodoce J. Hutchinson, Fam. Flow. Pl., ed. 1, 2: 240, sphalm. 1934.

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47, & 55. 1946; Moldenke, *Phytologia* 2: 493. 1948; Moldenke, *Alph. List Cit.* 3: 975 (1949) and 4: 1074. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 64, 66, 89, 95, & 212. 1949; Moldenke, *Biol. Abstr.* 27: 2682. 1953; Moldenke, *Phytologia* 4: 207—208. 1953; Angely, *Cat. Estat.* 10: [2]. 1956; Angely, *Fl. Paran.* 10: 6, 8, 10, & 11. 1957; J. Hutchinson, *Fam. Flow. Pl.*, ed. 2, 2: 576 & 778. 1959; Moldenke, *Résumé* 68, 73, 76, 104, 112, 287, 290, 324, 334, 403, & 490. 1959; Angely, *Liv. Gen. Bot. Bras.* 19 & 51. 1960; Jacks. in *Hook. f. & Jacks.*, *Ind. Kew.*, imp. 3, 1: 878 & 879 (1960) and imp. 3, 2: 401 & 497. 1960; Moldenke, *Résumé Suppl.* 2: 4. 1960; Angely, *Fl. Bacia Paran.* 22: 31. 1962; Dalla Torre & Harms, *Gen. Siphonog.*, imp. 2, 53. 1963; Hegnauer, *Chemotax. Pfl.* 2: 153. 1963; F. A. Barkley, *List Ord. Fam. Anthoph.* 113 & 196. 1965; Thanikaimoni, *Mem. Mus. Nat. Hist. Nat. Paris*, ser. 2, B.14: 9—38. 1965; Thanikaimoni, *Pollen & Spores* 7: 182, 183, 187, & 190, tab. 1. 1965; Airy Shaw in J. C. Willis, *Dict. Flow. Pl.*, ed. 7, 864. 1966; Thanikaimoni, *Biol. Abstr.* 47: 4169. 1966; Moldenke, *Résumé Suppl.* 15: 21 (1967) and 17: 11. 1968; Aristeguieta, *Act. Bot. Venez.* 3: 25. 1968; Lindeman & Görts-van Rijn in *Pulle & Lanjouw, Fl. Surin.* 1: 330—331. 1968; Moldenke, *Phytologia* 18: 242 & 509 (1969) and 19: 43. 1969; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: [146], 158, 166, 167, 174, 184—187, & 189—191. 1969; Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1156 & *Ind.* 22. 1970; Moldenke, *Phytologia* 19: 322 & 407. 1970; N. F. Good, *Biol. Abstr.* 52: 13438. 1971; Koyama & Oldenburger, *Rhodora* 73: 159. 1971; Moldenke, *Fifth Summ.* 1: 119, 126, 130, 132, 169, & 180 (1971) and 2: 492, 498, 508, 580, 600, 749, & 959. 1971; Anon., *Biol. Abstr.* 52 (24): B.A.S.I.C. S.187 & S.240. 1972; Airy Shaw in J. C. Willis, *Dict. Flow. Pl.*, ed. 8, 887. 1973; J. Hutchinson, *Fam. Flow. Pl.*, ed. 3, 710 & 951. 1973; Moldenke, *Phytologia* 25: 160, 229, & 509 (1973), 29: 317 & 510 (1974), 31: 406 (1975), 34: 257, 276, 390, 391, & 508 (1976), and 35: 14. 1976.

The type species of this genus is *P. hoffmannseggii* Mart. The genus is named in honor of Philodice, daughter of the river god, *Inachus*, in Greek mythology. It contains only two recognized species, although Dalla Torre & Harms (1963) say "Sp. 3 v 5. *Brasilia, Guiana*" (the 3rd, 4th, and 5th species are now placed in *Blastocaulon* Ruhl. The species of *Philodice*, in its restricted sense, are known from Colombia and Venezuela through Surinam and Guyana to Brazil. Angely (1957) says "O centro vegetativo está situado entre a Venezuela, Guiana Inglesa, Mato Grosso, Minas até a Ilha de Marajó".

It is of interest to note that the common Sulphur Butterfly of North America, *Colias philodice*, is dedicated to the same goddess.

Gleason, in his unpublished *Flora of British Guiana*, characterizes the genus as follows: "Flowers 3-merous; sepals lanceolate; staminate corolla urceolate to hemispheric, 3-lobed; pistillate corolla larger, with longer lobes connate only at the middle; anthers 2-locellate; stigmas alternating with 3 clavate appendages; stems erect, simple or sparingly branched, densely leafy; leaves

linear, heads crowded in the upper axils, forming a subumbellate cluster, the short peduncles without basal sheaths; bracts white and scarious, slightly exceeding the glabrous flowers."

The Martius reference in the bibliography above is often cited as "1833", which was the date of submission of the paper as a manuscript to the Academy. According to Dr. J. H. Barnhart, eminent botanical biographer and bibliographer, it wasn't actually published until 1835. Similarly, Müller's work (1860), cited above, is often credited to "Walp. Ann. 5: 921. 1858", but that volume was actually written by Müller and was not published until 1860.

The Endlicher (1836) reference, also listed above, is often cited as "1836--1856", but the page involved here was actually issued in 1836, while the Meisner (1842) reference is sometimes cited as "1836--1843", but the page here involved was actually issued in 1842. The Malme (1901) work is sometimes erroneously cited as "1903". The "Index Londinensis" gives "1906" as the publication date for the Pilger (1908) work, but the United States Library of Congress printed card retains the 1908 title-page date.

Macbride (1931) feels that Philodice, along with Blastocaulon, Lachnocaulon, and Syngonanthus, should be united in the genus Paepalanthus as a single "natural" genus. I cannot see how such "lumping" of these quite sufficiently well-marked genera would serve any useful purpose. The genus Paepalanthus is already far too bulky and inclusive of disparate elements for convenience in identification.

The Steyermark, Steyermark, Wurdack, Wurdack, & Wiehler 106609, distributed as a species of Philodice, actually is the type collection of Paepalanthus sessiliflorus var. venezuelensis Moldenke.

PHILODICE CUYABENSIS (Bong.) Körn. in Mart., Fl. Bras. 3 (1): 305, pl. 38, fig. 2. 1863.

Synonymy: Eriocaulon cuyabense Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 634 & 654, pl. 10, fig. 2. 1831. Eriocaulon cuyabense Bong. ex Steud., Nom. Bot., ed. 2, 1: 585. 1840. Paepalanthus cuyabensis Kunth, Enum. Pl. 3: 520. 1841. Philodice cuiabensis Körn. in Mart., Fl. Bras. 3 (1): 362 & 507. 1863. Eriocaulon cuyabensis Bong. apud Ruhl. in Engl., Pflanzenreich 13 (4-30): 281. 1903.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 634 & 654, pl. 10 [inf.]. 1831; Bong., Ess. Monog. Erioc. 34 & 54, pl. 10 [inf.]. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 520, 577, 578, 613, & 624. 1841; D. Dietr., Syn. Pl. 5: 261. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 277. 1855; Körn. in Mart., Fl. Bras. 3 (1): 305, 362, & 507, pl. 38, fig. 2. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1024. 1883; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 25. 1888; Jacks.

in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 878 (1893) and imp. 1, 2: 401 & 497. 1894; Ruhl. in Engl., Pflanzenreich 14 (4-30): 280, 281, 285, & 289. 1903; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 57. 1930; Stapf, Ind. Lond. 3: 90. 1930; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 878 (1946) and imp. 2, 2: 401 & 497. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 33, 47, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 89 & 212. 1949; Moldenke, Résumé 104, 287, 324, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 878 (1960) and imp. 3, 2: 401 & 497. 1960; Moldenke, Fifth Summ. 1: 169 (1971) and 2: 498, 580, & 959. 1971; Moldenke, Phytologia 25: 160 & 229 (1973) and 29: 317. 1974.

Illustrations: Bong., Mém. Acad. Sci. St. Pétersb., ser. 6, 1: [Ess. Monog. Erioc.] pl. 10 [inf.]. 1831; Körn. in Mart., Fl. Bras. 3 (1): pl. 38, fig. 2. 1863.

This species is based on L. Riedel 946 from wet grassy places near Cuyabá, Mato Grosso, Brazil, flowering in April, and deposited in the Leningrad herbarium. The original description reads: "pusillum, caulescens; cauliculis subcaesпитosis simplicibus foliosis; foliis caulinis linearibus glabris; pedunculis fasciculatis foliis involucrentibus brevioribus; vaginis nullis". Kunth comments: "Nulli mihi noto, nisi praecedenti [Paepalanthus bryoides] vel P. fasciculato similis; a Bongardio tamen inter species capitulis glabriusculis positus". Ruhland (1903) cites only the original collection.

It should be noted here that in Bongard's original work (1831) the upper part of plate 10 depicts Paepalanthus bryoides (Riedel) Kunth and is referred to by me as "pl. 10 [sup.]" rather than as "fig. 1" as it is in the Bongard text and elsewhere — it actually consists of figures 1-7. The lower half of the plate depicts Philodice cuyabensis and is referred to by me as "pl. 10 [inf.]" rather than as "fig. 2" — it actually consists of figures 1-6.

The Irwin, Harley, & Smith 32664a, cited below, is a mixture with Syngonanthus ulei var. goyazensis Moldenke, which I am citing as the true no. 32664.

Citations: BRAZIL: Goiás: Irwin, Harley, & Smith 32664a (N). Mato Grosso: L. Riedel 946 (B--isotype, Br--isotype, N--isotype, N--photo of isotype, Z--photo of isotype). MOUNTED ILLUSTRATIONS: Bong., Mém. Acad. Imp. Sci. St. Péters., ser. 6, 1: pl. 10 [inf.]. 1831 (N, Z); drawings by Körnicke (B).

PHILODICE HOFFMANNSEGGII Mart., Nov. Act. Acad. Physico-med.

Leopold.-Carol. Nat. Cur. 17 (1): 17-19, pl. 3, fig. 1-11. 1835.

Synonymy: Eriocaulon niveum Hoffm. ex Kunth, Emm. Pl. 3: 496 & 615, in syn. 1841 [not E. niveum Bong., 1831]. Philodice hoffmannseggii var. laxa Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 304-305. 1863. Philodice hoffmannseggii var. compacta Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 305, pl. 38, fig. 2. 1863. Phil-

*odice hoffmannseggii* var. ♂ Körn. in Mart., Fl. Bras. 3 (1): 499. 1863. *Paepalanthus hoffmanseggii* Mart. apud Benth. & Hook. f., Gen. Pl. 3 (2): 1024. 1883. *Philodice hoffmanseggii* Mart. ex Moldenke, Résumé 334, in syn. 1959. *Philodice hoffmanseggii* Mart. ex Moldenke, Fifth Summ. 2: 660, in syn. 1971.

Bibliography: Mart., Nov. Act. Physico-med. Acad. Leopold.-Carol. Nat. Cur. 17 (1): 17—19 & 44, pl. 3, fig. 1—11. 1835; Kunth, Enum. Pl. 3: 496—497 & 613. 1841; Steud., Syn. Pl. Glum. 2: [Cyp.] 283 & 342. 1855; Körn. in Mart., Fl. Bras. 3 (1): 304—305, 362, 499, & 507, pl. 38, fig. 2. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1024. 1883; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 22, 25, & 27. 1888; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 879 (1893) and imp. 1, 2: 497. 1894; Malme, Bih. Svensk. Vet. Akad. Handl. 27 (3), no. 11: 26. 1901; Ruhl. in Engl., Pflanzenreich 13 (4—30): 280—281 & 286, fig. 40. 1903; Alv. Silv., Fl. Mont. 1: 415. 1928; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 57, fig. 25. 1930; Herzog in Fedde, Repert. Spec. Nov. 29: 213. 1931; Stapf, Ind. Lond. 5: 62. 1931; Worsdell, Ind. Lond. Suppl. 2: 220. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 879 (1946) and imp. 2, 2: 497. 1946; Moldenke, Alph. List Cit. 1: 132 & 223. 1946; Moldenke, Known Geogr. Distrib. Erioc. 6, 16, 38, & 55. 1946; Moldenke, Phytologia 2: 493. 1948; Moldenke, Alph. List Cit. 3: 975 (1949) and 4: 1074. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 64, 66, 89, 95, & 212. 1949; Moldenke, Phytologia 4: 207—208. 1953; Moldenke, Résumé 68, 73, 76, 104, 112, 290, 334, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 879 (1960) and imp. 3, 2: 497. 1960; Moldenke, Résumé Suppl. 2: 4. 1960; Thanikaimoni, Pollen & Spores 7: 183 & 187, tab. 1. 1965; Aristeguieta, Act. Bot. Venez. 3: 25. 1968; Lindeman & Görts-van Rijn in Pulle & Lanjouw, Fl. Surin. 1: 330—331. 1968; Moldenke, Résumé Suppl. 17: 11. 1968; Moldenke, Phytologia 19: 43. 1969; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 158, 166, 167, 174, 184—187, & 189—191. 1969; N. F. Good, Biol. Abst. 52: 13438. 1971; Koyama & Oldenburger, Rhodora 73: 159. 1971; Moldenke, Fifth Summ. 1: 119, 126, 130, 132, 169, & 180 (1971) and 2: 508, 600, & 959. 1971; Anon., Biol. Abstr. 52 (24): B.A.S.I.C. S.187 & S.240. 1972; Moldenke, Phytologia 29: 317 (1974) and 34: 257. 1976.

Illustrations: Mart., Nov. Act. Physico-med. Acad. Leopold.-Carol. Nat. Cur. 17 (1): pl. 3, fig. 1—11. 1835; Körn. in Mart., Fl. Bras. 3 (1): pl. 38, fig. 2. 1863; Ruhl. in Engl., Pflanzenreich 13 (4—30): 280, fig. 40. 1903; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 57, fig. 25. 1930; Thanikaimoni, Pollen & Spores 7: 183, tab. 1. 1965.

This, the type species of the genus, is based on *Sieber s.n.* from Grão Pará, Pará, Brazil, probably deposited in the Vienna herbarium; this collection is also the type of var. *laxa* Mart., the typical variety. Martius' var. *compacta* is based on *G. Gardner 2749bis* from Piauí, Brazil. Körnicke (1863) distinguishes

the varieties as follows: var. laxa -- "foliis flaccidis; pedunculis elongatis, plerisque folia superantibus", and var. compacta -- "foliis arrectis, rigidis; pedunculis brevibus, folia vix aequantibus vel brevioribus". For var. laxa he cites Sieber s.n. (the type), Spruce s.n. [Santarem], and Weddell 3320 [Mato Grosso]. For var. compacta he cites only G. Gardner 2749bis. Ruhland (1903) feels that the varieties are not sufficiently distinct to merit nomenclatural recognition and cites for the species as a whole the following: VENEZUELA: Delta Amacuro: Passarge & Selwyn 352 & 359. Zulia: Passarge & Selwyn 577. BRAZIL: Ceará: Huber 64. Mato Grosso: Malme 1634; Weddell 3320. Minas Gerais: Glaziou 1991. Pará: Huber 386; Sieber s.n.; Spruce 2693. Piauí: G. Gardner 2749.

Lindeman & Górts-van Rijn (1968) cite J. P. Schulz s.n. from Surinam and give the extra-limital distribution of the species as "North and central Brazil. British Guiana". Malme (1901), whose work is sometimes erroneously cited as "1903", cites Malme 1634 from Mato Grosso "In argillaceis humidis, apertis", flowering in January.

Gleason, in his unpublished flora of British Guiana, described the species as "Stems 5—20 cm. high, the narrowly linear leaves about 1 cm. long; peduncles 1—2 cm. long; heads 5 mm. in diameter, the bracts narrowly lanceolate, acuminate" and cites Appun 1741, Jenman 728, and Lloyd s.n. from Guyana, giving the overall distribution as "Venezuela to Brazil". Silveira (1928) cites Huber 442 from Marajo Island, Brazil.

Kunth (1841) comments "Ob habitam Paepalantho fasciculato similis", a statement which is certainly quite true.

The species has been collected among rocks, on seashores, along the margins of streams and swamps, in dried-up marshes, on clay soil in damp open places, in small lakes, and on sandy soil which is somewhat marshy in the rainy season. Goodland found it "in open hog-wallowed impeded drainage marsh with mottled clay pan in grassland with scattered trees, the dominants being Curatella, Byrsonima, Trachypogon, and Fimbristylis", while Wurdack & Monachino refer to it as "locally abundant in morichal". Oldenburger and his associates found it growing in association with Diplacrum africanum, Syngonanthus glandulosus, S. gracilis var. koernickeanus, Bacopa monierioides, Centunculus pentander, Polygala paludosa, Utricularia adpressa, and Eleocharis nana. Davidse found it growing in an area where water accumulates during rains on open savannas without any trees in a low-lying area between mountain ranges and with a deep layer of sand, and speak of it as having "spikelets white" [the flowers are in heads, not in spikelets].

It has been encountered at altitudes of 40—115 meters, flowering in January, April, May, and July to December, fruiting from August to October.

It should be noted here that the original publication of this

species by Martius is often cited as "1833", but according to the late botanical bibliographer, Dr. J. H. Barnhart, this work was not actually published until 1835. Likewise, it is worth noting that separate reprints of the Koyama & Oldenburger paper, cited in the bibliography above, are inscribed "Reprinted from Rhodora, Vol. 73, 793, 1971", but this is erroneous. The paper appears on pages 159--160 of that volume.

The Eriocaulon niveum Bong., referred to in the synonymy above, is the name-bringing synonym of what is now known as Syngonanthus niveus (Bong.) Ruhl.

Goodland 302, cited below, is a mixture with Syngonanthus huberi Ruhl. and Eriocaulon guyanense Körn. Weddell 3320, in the Brussels herbarium, is inscribed by Körnicke "var. a transitorius ad var. b".

Material of this species has been misidentified and distributed in some herbaria as Eriocaulon fasciculatum Lam.

Additional citations: COLOMBIA: Magdalena: C. Allen 669 (E--1014520). VENEZUELA: Bolívar: G. Davidse 4388 (Ld); Wurdack & Monachino 39958 (N, S). Guaricó: Aristeguieta 4893 (S); Guyon 47 (P), s.n. (P); Tamayo 4562 (S); Tamayo & Aristeguieta 4275 (N). GUYANA: Goodland 302, in part (W--2546172); Goodland & Persaud 778 (N); A. C. Smith 2284 (Er, S). SURINAM: Irwin, France, Soderstrom, & Holmgren 55239 (N), 55932 (N); Oldenburger, Norde, & Schulz ON.147 (N). BRAZIL: Amazonas: Lützelburg 20532 (Mu), 21043 (Mu, Mu); Zerny s.n. [18 August 1927] (V--10785). Ceará: Drouet 2371 (Mi). Mato Grosso: Cordeiro 51 (Ld); Malme 1634 (S, S), 1660 (S), 1660a (S); Weddell 3320 (Br). Minas Gerais: A. Lutz 606 [Herb. Lutz 606] (Z). Pará: Black 52-15518 (Be--77500), 54-16915 (N); Black & Ledoux 50-10454 (Z); Fröes 29907 (Hk, N); Murça Pires, Black, Wurdack, & Silva 6505 (N); Sieber [Hoffmannsegg] s.n. [Pará] (B--isotype, Br--isotype, Mu--342--isotype, N--photo of isotype, Z--photo of isotype); Spruce 611 (Mu--274), 2693 (B), s.n. [Prope Santarem, Mart. 1850] (N, S), s.n. [In vicinibus Santarem] (B), s.n. [Amazon] (T); Tavares 17 (N). Roraima: Black 51-12571 (Be--70387), 51-13127 (N), 51-13839 (N); Ule 7666 (W--1615008). MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 38, fig. 2. 1863 (B, B, Mu, N, Z); drawings by Kunth & Körnicke (B).

RONDONANTHUS Herzog in Fedde, Repert. Spec. Nov. 29: 210. 1931.

Synonymy: Rhondonanthus Herzog ex Moldenke, Résumé 343, in syn. 1959. Rodonanthus Steyerl., Act. Bot. Venez. 1: 19, sphalm. 1966. Rononanthus Steyerl. ex Moldenke, Résumé Suppl. 16: 26, sphalm. in syn. 1968.

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(4-30): 221. 1903; Gleason, Bull. Torrey Bot. Club 52: 195. 1925; Herzog in Fedde, Repert. Spec. Nov. 29: 210. 1931; Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1932; A. W. Hill, Ind. Kew. Suppl. 9: 238. 1938; Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 20. 1939; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 310. 1941; Moldenke, Known Geogr. Distrib. Erioc. 6, 31, 53, 56, & 60. 1946; Moldenke, Phytologia 2: 352 & 381. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 64, 66, & 212. 1949; Moldenke, Biol. Abstr. 27: 2682. 1953; Moldenke, Phytologia 4: 208. 1953; Angely, Cat. Estat. 10: [2]. 1956; Angely, Fl. Paran. 10: 8, 10, & 11. 1957; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 310. 1959; Moldenke, Résumé 73, 76, 282, 328, 343, 401, & 490. 1959; G. Taylor, Ind. Kew. Suppl. 12: 122. 1959; Barkley, List Ord. Fam. Anthoph. 113 & 205. 1965; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 7, 977. 1966; J. A. Steyerm., Act. Bot. Venez. 1: 19, 91, & 238. 1966; Moldenke, Résumé 16: 26 (1968) and 18: 9. 1969; Moldenke, Phytologia 20: 296 & 297 (1970) and 20: 510. 1971; Moldenke, Fifth Summ. 1: 126, 130, & 485 (1971) and 2: 590, 618, 746, & 960. 1971; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 1003. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 710 & 956. 1973; Moldenke, Phytologia 26: 470 & 509 (1973), 28: 456 & 511 (1974), and 34: 277. 1976; P. Morat, Adansonia, ser. 2, 15: 466. 1976.

This small genus was named in honor of General Rondon, well-known for his many scientific expeditions into the interior and along the boundaries of Brazil, an area now known as the territory of Rondônia. The type species is Paepalanthus roraimae Oliv. [=Rondonanthus roraimae (Oliv.) Herzog]. The plants are dioecious, the peduncles single or few, the heads rather large, the involucre bracts large, narrow, dark-brown, radiating horizontally or finally reflexed, receptacular bractlets present, slightly surpassing the florets. The male florets have 3 sepals which are long-barbate at the apex, the hairs very long, clavate at the apex, the sides thickened, smooth outside, slightly granular within, 3 petals which are subequal, free, and glabrous, 3 stamens, attached to the base of the petals, the anthers 2-celled; the pistillate florets have the sepals and petals subsimilar, black, barbate at the apex. The ovary is 3-celled, the stigmas 3, simple, with obvious appendages. Hutchinson (1973) reduces the genus to the synonymy of Paepalanthus.

RONDONANTHUS MICROPETALUS Moldenke, Phytologia 2: 352, nom. nud. 1947; Fieldiana 28: 126--127. 1951.

Bibliography: Moldenke, Phytologia 2: 352. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 64 & 212. 1949; Moldenke, Fieldiana 28: 126--127. 1951; Moldenke, Phytologia 4: 208. 1953; J. A. Steyerm., Fieldiana 28: 1158. 1957; Moldenke, Résumé 73 & 490. 1959; J. A. Steyerm., Act. Bot. Venez. 1: 91 & 238. 1966; Moldenke, Fifth Summ. 1: 126 (1971) and 2: 960. 1971.

In the absence of pistillate florets, this taxon is placed in this genus tentatively. It differs notably from the type species



and may well represent another genus.

RONDONANTHUS RORAIMAE (Oliv.) Herzog in Fedde, Repert. Spec. Nov. 29: 210. 1931.

Synonymy: Paepalanthus roraimae Oliv., Trans. Linn. Soc. Lond. Bot., ser. 2, 2: 286, pl. 49 B, fig. 7--14. 1887. Dupatya roraimae (Oliv.) Gleason, Bull. Torrey Bot. Club 52: 195. 1925. Dupatya roraimae Gleason apud A. W. Hill, Ind. Kew. Suppl. 7: 79. 1929. Dupatya roraimae (Oliv.) Rusby apud Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60. 1932.

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Illustrations: Oliv., Trans. Linn. Soc. Lond. Bot., ser. 2, 2: pl. 49 B, fig. 7--14. 1887.

The type of this, the type species of the genus, was collected by Sir Everard Ferdinand ImThurn (no. 294) in marshy ground on granite rock on the summit of Mount Roraima, Guyana, in 1884, probably deposited in the herbarium of the British Museum in London. Both Oliver (1887) and Ruhland (1903) cite only the type collection, but Gleason, in his unpublished flora of British Guiana, cites ImThurn 294, Quelch & McConnell 102, 315, & 660, G. H. Tate 372, and Ule 8555. He describes the plant as follows: "Caudex very short, densely woolly; leaves densely rosulate, rigid, narrowly linear, 2--3 cm. long, often curved, obtuse, nearly or quite glabrous; peduncles mostly solitary, 5--15 cm. long, glabrous, their sheaths much exceeding the leaves, dilated distally; heads hemispheric, cinereous, 8--12 mm. in diameter; bracts spreading, black, oblong, conspicuously white-ciliate, exceeding the leaves." He refers to it as endemic to Mt. Roraima.

Ruhland (1903) cites ImThurn "994" [probably an error for 294, the type collection] and expresses his doubt as to the generic

position of this plant by saying "Speciei huius affinitates propter descriptionem atque iconem miserrimam incertissimae. Ne genus quidem, in quo collocanda sit constat." Herzog (1931) says "Diese von Oliver.....beschriebene und abgebildete Art muss als Typus einer eigenen Gattung betrachtet werden, die sich in ihrem Blütenbau von allen den Hunderten von Paepalanthusarten, überhaupt von sämtlichen Eriocaulonaceen durch die freien Petalen der ♂ Blüten unterscheidet. Ferner scheint mir die Pflanze obwohl Oliver darüber nichts bemerkt, dioecisch zu sein eine bei den Eriocaulonaceen auch sehr selten beobachtete Eigenschaft....Das wichtigste Merkmal der neuen Gattung sind die freien Petalen der ♂ Blüte. Sie sind fast ebenso lang wie die Kelchblätter und ziemlich derb gebaut, aber kahl und fast hyalin: an ihrer Basis sind sie mit dem zugehörigen dithecischen Staubblatt verwachsen."

Mount Roraima being situated on the Guyana-Brazil-Venezuela international boundary, the type and some of the other collections cited below as from Guyana are sometimes cited by other workers as from northern Brazil (Roraima) or from Venezuela (Bolívar) with equal justification. Lützelburg avers quite definitely that his collection was made in Brazil.

Collectors have found the species growing in sandy bogs and marshy places over granite rock; Irwin refers to it as a "tufted herb", growing "in acid muddy soil in rocky crevice near brook". It has been encountered at altitudes of 2500--3000 meters, flowering in April, November, and December.

Oliver's original (1887) description is sometimes cited as "1886" [the date when the paper was read to the Linnean Society] or even "1884" [by Ruhland], but the actual date of publication seems definitely to have been 1887.

Additional citations: VENEZUELA: Bolívar: Irwin 400 (W--2197624); J. A. Steyermark 58799 (S). GUYANA: Abbenets 8 (Ut--15035A); ImThurn 294 (N); Quelch & McConnell 102 (N), 660 (N); G. H. H. Tate 372 (N, Qu). BRAZIL: Roraima: Lützelburg 21605 [Macbride photos 18723] (Ja--47671, Mu, N, N--photo, N--photo, W--photo).

SYNGONANTHUS Ruhl. in Urb., Symb. Ant. 1: 487. 1900.

Synonymy: Limnoxeranthemum Salzm. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 281, in syn. 1855. Syngonanthos Ruhl. ex Uphof, Am. Journ. Bot. 14: 44. 1927. Eriocaulon Auct. (in part) ex Stapf, Ind. Lond. 3: 90, in syn. 1930 [not Eriocaulon Gron., 1753, nor (Gronov.) L., 1913, nor Juss., 1810, nor L., 1816, nor Mart., 1959, nor (Vell.) L. B. Sm., 1971]. Syngonathus Ruhl. ex Reitz, Selowia 7: 124, sphalm. 1956. Carpocephalus Kunth ex Moldenke, Résumé 249, in syn. 1959. Andraspidopsis Körn. apud Soukup, Biota 2: 303, in syn. 1959. Carpocephalus Körn. apud Soukup, Biota 2: 303, in syn. 1959. Psilocephalus Körn. apud Soukup, Biota 2: 303, in syn. 1959. Limnoxeranthemum "Salzm. ex Steud." apud Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 7, 656. 1966. Syngon-

*nanthus* Ruhl. ex Aristeguieta, Act. Bot. Venez. 3: 25, sphalm. 1968. *Syngonanthes* Van Herman ex Moldenke, Résumé Suppl. 18: 14, in syn. 1969.

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32: 485--487 & 512, fig. 2 (1976), 33: 25, 27, 34, 37--39, 51, 138, 184, 189, 191, 202, 273, 480, & 511 (1976), 34: 248, 256--260, 271--273, 275--278, 390, 392, 395, 486, 487, 505, & 511 (1976), and 35: 14, 16, 18, 24, 28, 31, & 36. 1976; Anon., Biol. Abstr. 61: AC1.718. 1976; P. Morat, *Adansonia*, ser. 2, 15: [463]. 1976; Lakela, Long, Fleming, & Genelle, *Fl. Tampa Bay*, ed. 3, [Bot. Lab. Univ. S. Fla. Contrib. 73:] 39, 150, & 180. 1976; Long & Lakela, *Fl. Trop. Fla.*, ed. 2, 259, 262, 930, & 958. 1976; Moldenke, *Phytologia* 35: 112, 125, 260, & 264. 1977.

The generic name was taken by Ruhland (1900) from the Greek, ἑρύριος, united, and ἄρθος, flower, from the fact that the petals are connate in both sexes in this genus. How our knowledge of the extent of this genus has grown in the comparatively few years of botanical exploration may be judged from the fact that Ruhland (1903) knew of only 80 species in the genus, Gleason, in his unpublished *Flora of British Guiana* (ca. 1930) listed 85 species, Moldenke (1939, 1940) "about 160" species, Herter (1954) 100 species, Moldenke in Humbert (1955) 247 taxa, and Angely (1956, 1957) 258 taxa. Thorne (1973) avers that there are 196 species, of which, he says, 195 are American, 1 is African, and 1 is in Madagascar. Actually, as of the date of this writing, we now recognize 297 taxa, of which 286 are American, 10 are African, and 1 is from Madagascar.

In 1956 Angely recognized from Brazil, 22 species in Amazonas, 14 in Pará, 3 in Maranhão, 11 in Piauí, 2 in Pernambuco, 12 in Bahia, 135 in Minas Gerais, 6 in Mato Grosso, 24 in Goiás, 10 in Rio de Janeiro, 14 in São Paulo, 8 in Paraná, 4 in Santa Catarina, and 4 in Rio Grande do Sul. He also asserts that there are 28 species in Venezuela, 13 in Guyana, 9 in Surinam, 2 in Zaire, and 4 in Cuba.

The type species of the genus is Eriocaulon umbellatum Lam.

[=Syngonanthus umbellatus (Lam.) Ruhl.]

It should be noted here that Eulepis was proposed as a section of Eriocaulon by Bongard in 1831, and included (in this order) the following species:

E. prescottianum

E. elegans

E. niveum

E. aciphyllum

E. nitidum

E. anthemiflorum

Post & Kuntze (1904), in elevating Eulepis to generic rank, chose E. prescottianum (Bongard's first-mentioned species) as type. Since E. prescottianum is a Mesanthemum, it is apparent that the generic name, Eulepis, must fall into the synonymy of Mesanthemum. Yet Ruhland (1903) transferred the name, Eulepis, to Syngonanthus as a section name for Bongard's other species: S. elegans, S. niveus, S. aciphyllum, S. nitidus, S. anthemiflorus, and their more recently described relatives. Bongard's sole diagnosis of Eulepis, "squamis

capitulorum radiantibus", applies equally well in both interpretations, but, of course, the essential floral characters are now known to be quite different in the two groups.

Martin (1946) reports the presence of endosperm in the seeds of Syngonanthus. Pollen characters are given for the genus (on the basis of 2 species studied!) by Thanikaimoni (1965). LeCointe (1947) records the vernacular name, "pepalantho", for members of the genus in Amazônas, Brazil, while Long & Lakela (1971) record "bantum buttons" from Florida (where only a single species, S. flavidulus, is found). In both cases the names are given as applying to the entire genus.

Limnoxeranthemum Salzm. and Limnoxeranthemum "Salzm. ex Steud." are sometimes given as synonyms of Paepalanthus Mart., notably by Airy Shaw (1966), but both species on which the name was based originally are members of the genus Syngonanthus, so the name must fall into the synonymy of Syngonanthus, not of Paepalanthus.

Curiously, in Biol. Abstr. 27: 3767 (1955) Syngonanthus is classified as a "Dicotyledon". It is also worth noting here that Ruhland (1900) dates Körnicke's monumental work on the family as "1871" when actually it should be 1863. Lecomte's paper (1909) is sometimes cited as "1908" — actually the paper was read at the November 13, 1908, meeting of the society, but was not published until 1909. My work in Bull. Torrey Bot. Club 68: 70 is dated "1941" on the cover, but was actually published and deposited in the New York Botanical Garden library on December 31, 1940. The Angely (1972) work is often cited as "1970", the title-page date, but was not actually published until 1972. Stapf (1931) gives "1906" as the date for the Pilger (1908) work, but the United States Library of Congress printed card retains the 1908 title-page date as correct.

The Soukup (1959) work, cited in the bibliography above, is sometimes referred to as being in volume "5" — actually it is in volume 2 of Biota. The names which he lists there as generic synonyms of Syngonanthus [Andraspidopsis Körn., Carpocephalus [error for Carphocephalus] Körn., and Psilocephalus Körn.] are actually subgeneric names which Körnicke proposed in Paepalanthus and later transferred by Ruhland to sectional and subsectional rank in Syngonanthus.

Koyama & Oldenburger (1971) encountered species of Syngonanthus growing in association with Diplacrum africanum, Philodice hoffmannseggii, Bacopa monnierioides, and Centunculus pentander in Surinam.

The Bogner 1010, distributed as a species of Syngonanthus, is actually Paepalanthus cristatus Moldenke, Moore, Dietz, & Pfister 9793 is P. squamiferus Moldenke, Moore, Ambrose, Dietz, & Pfister 9813 is P. cumbricola Moldenke, Pannier & Schwabe s.n. [Auyantepui] is not eriocaulaceous, and Vareschi & Foldats 4727 is something in the Cyperaceae.

Ruhland (1903) distinguishes his 5 sections of Syngonanthus as

follows:

1. Floris feminei petala sepalis breviora vel vix aequalia.
2. Petala floris masculi in tubum tenui-membranaceum, breviter trilobum, demum involutum connata; caulis (uno S. hygroticho excepto) perbrevis, simplex, pedunculifer vel sterilis tumque ramis perbrevibus, aphyllis vel apice modo vel tota superficie foliosis, terminaliter pedunculiferis auctus. Sect. 1. Dimorphocaulon Ruhl.
- 2a. Petala floris masculi in tubum plusminusve urceolatum, carnosulum, apice tenuiorem et saepius involutum, demum plerumque in petala 3 rhomboidea solubilem connata. Sect. 2. Carphocephalus Körn.
- 1a. Floris feminei petala sepalis perspicue longiora, raro demum inflexa, rigidula.
3. Bracteae involucrantes disco plusminusve longiores, membranaceae.
4. Bracteae paucae non radiantes, aequales, disco parum longiores; appendices styli nullae; caulis elongatus. Sect. 3. Chalarocaulon Ruhl.
- 4a. Bracteae discum multo superantes, radiantes, inaequales (exteriores interioribus multo breviores); stylus appendicibus instructus; caulis perbrevis. Sect. 4. Eulepis Bong.
- 3a. Bracteae involucrantes disco perspicue breviores, perrigidae; capitula campanulata, thysanomorpha. Sect. 5. Thysanocephalus Körn. [Thysanocephalus Ruhl. ex Moldenke, Fifth Summ. 2: 743. 1971].

His Section Dimorphocaulon is divided by him into two subsections as follows:

1. Psilocephalus (Körn.) Ruhl. -- Caulis primo intuitu semper fertilis; id est: pedunculi ex axilla folii caulini egredientes, rarius in apice ramorum perbrevium et vix conspicuorum, apice modo foliosorum solitarii.
2. Andraspidopsis (Körn.) Ruhl. -- Caulis semper perspicue sterilis; id est: pedunculi in apice ramorum foliorum caespitem caulinem multo superantium per plures fasciculato-congesti vel solitarii.

In his original description of the genus, Ruhland (1900) gives its essential diagnostic characters as "Flores masculi et feminei mixti, trimeri, perigonio duplici instructi. Stamina numero laciniis perigoniorum aequalia. Antherae quadriloculares. Flores feminei partes perogonii interioris margine medio connatae. Stigma simplicia. Pili bractearum et perigoniorum acuti, extus et intus laeves, nunquam clavati." He comments that "Differt hoc genus a Paepalantho (sens. strict.) praesertim structura perigonii interioris floris feminei. In monographia jam a me praeparata characteres amplius digeram." He separates the West Indian species known to him as follows:

1. Caulis perbrevis, sterilis, ramo plerumque uno vel rarius paucis elongatis. Apice modo caespitem foliorum pedunculorum

proferente ornatus.....S. umbellatus.

1a. Caulis perbrevis, subsimplex, pedunculifer.

2. Bracteae involucrantes plus minus fulvo-flavidae, basi ciliolatae; folia olivaceovirentia, plerumque 3.5 cm. longa....

S. androsaceus.

2a. Bracteae involucrantes pallide stramineo-flavae, glabrae; folia laete viridia, plerumque modo 2 cm. longa.....

S. lagopodioides.

A more up-to-date key to the West Indian species, as well as North and Central American taxa, will be found in my 1937 work cited in the bibliography above.

The Yucatán species are keyed out by me (1940) as follows:

1. Peduncles glabrous or practically so.....S. oneillii.

1a. Peduncles conspicuously pubescent.

2. Involucral bractlets hyaline, completely colorless.....

S. bartlettii.

2a. Involucral bractlets more or less olivaceous.

3. Sheaths shorter than the leaves, densely short-pubescent; the pubescence on the peduncles mostly appressed; bractlets to 2.5 mm. long, glabrous.....S. hondurensis.

3a. Sheaths longer than the leaves, loosely long-pilose; pubescence on peduncles spreading; bractlets to 8 mm. long, villous.....S. lundellianus.

Lindeman & Görts-van Rijn (1968) separate the Surinam species known to them at that time as follows:

1. Leaves all radical in a dense rosette or partly in a second rosette at the end of the stem.

2. Peduncles umbellate at the end of the leafless stem; leaves often in a second rosette beneath the pedunculate umbel..

S. umbellatus.

2a. Stemless.

3. Peduncular sheaths with rounded sinus; involucral bracts narrow, acute; style with appendages....S. glandulosus.

3a. Peduncular sheaths not with rounded sinuses.

4. Involucral bracts glabrous, the inner ones twice as long as the flowers, radiating; petals of the female flowers longer than the sepals.....S. kegelianus.

4a. Involucral bracts almost as long as the flowers.

5. Male and female florets not very unequal in size or shape; involucral bracts about the same length as the flowers.

6. Leaves about 5 mm. long, densely rosulate, white-villous and pilose, later glabrous; peduncles 5—7 cm. long; involucral bracts glabrous, the inner ones ciliate; style without appendages..S. simplex.

6a. Leaves 1—3 cm. long, cespitose, glabrous or slightly puberulous; peduncles 6—30 cm. long; involucral bracts longer than or equaling the florets; sepals at first puberulous in the middle, later glabrous.....S. gracilis.

- 5a. Male florets about half as long as the female ones, irregular, longer-pedicelled; heads somewhat echinate in appearance; leaves 6—8 mm. long, arachnoid, tomentose to glabrous above; involucre bracts much shorter than the florets.....S. biformis.
- 1a. Stems leafy, more or less elongate.
7. Stems densely arachnoid-pubescent with white matted hairs.  
S. surinamensis.
- 7a. Stems not arachnoid-pubescent.
8. Peduncles glandular-pubescent, 7—11 cm. long; leaves 1.5 mm. wide, about 1 cm. long; peduncular sheaths with rounded sinus.....S. glandulosus.
- 8a. Peduncles pubescent to glabrous, their sheaths obliquely split; leaves 1—5 cm. long.
9. Stems floating, up to 3 dm. long; leaves fenestrate, 0.2 x 3—4.5 cm.; peduncles 2—4 together at the end of the stem, 3—6 cm. long; petals of the female florets slightly longer than the sepals; style without appendages.....S. macrocaulon.
- 9a. Stems up to 8 dm. long, simple; leaves 1.5—4.5 mm. x 1.5—3.5 cm.; peduncles 5—30 cm. long, in a terminal fascicle; petals of the female florets shorter than the sepals; styles appendaged.....S. caulescens.
- Gleason, in his unpublished flora of British Guiana, keys out the species known to him from that area at that time as follows:
1. Leaves scattered along the elongate stem.
2. Subtending bracts present; leaves 1 mm. wide or less.
3. Principal leaves about 15 mm. long, very thin and lax; peduncular sheaths acuminate.....S. anomalus.
- 3a. Principal leaves about 5 mm. long, firm, prominently nerved; peduncular sheaths obtuse.....S. brevifolius.
- 2a. Subtending bracts none; leaves 2—5 mm. wide.S. caulescens.
- 1a. Leaves rosulate, cespitose, or whorled.
4. Heads in leafy-bracted, long-stalked umbels.
5. Leaves subtending the umbels about 1 mm. wide; bracts acuminate.....S. umbellatus.
- 5a. Leaves subtending the umbels 3—5 mm. wide; bracts obtuse or subacute.....S. longipes.
- 4a. Heads 1 to several, on separate peduncles arising from among the basal leaves
6. Petals of the pistillate florets distinctly exceeding the sepals.....S. tricostatus.
- 6a. Petals of the pistillate florets shorter than the sepals.
7. Lateral sepals of the staminate florets strongly falcate and inequilateral.
8. Pistillate and staminate florets, including their pedicels, about equal in length.....S. simplex.
- 8a. Pistillate florets about twice as long as the staminate.....S. biformis.
- 7a. Lateral sepals of the staminate florets not falcate, equilateral.

9. Bracts obovate, broadly rounded at the summit.....

S. gracilis.

9a. Bracts oblong, acute to obtuse at the apex.

10. Leaves rosulate; peduncles not glandular; sinus of the sheaths, opposite the lamina, acute.....

S. eriophyllus.

10a. Leaves crowded on a very short stem; peduncles glandular; sinus of the sheaths broadly rounded...

S. glandulosus.

Hess (1955) says of the genus: "Die Gattung Syngonanthus schliesst sich im Blütenbau eng an die Gattung Mesanthemum an. In den verwachsenen Petalen stimmen die beiden Gattungen überein. Syngonanthus hat aber nur noch drei Staubblätter und nie Drüsen an den Petalen. Von den 180 bis 200 heute angegebenen Arten sind nur 6 ausserhalb von Amerika und seinen vorgelagerten Inselgruppen bekannt. Diese Arten sind kontinental afrikanisch; auf Madagaskar fehlt die Gattung wahrscheinlich. Die 6 Arten sind alle miteinander nahe verwandt, und ihre Unterscheidung bietet oft grosse Schwierigkeiten. Die Morphologie der Blüten ist einförmig, zudem haben viele Merkmale eine grosse Variationsbreite. Allen afrikanischen Arten ist das Fehlen von Brakteen der Blüten gemeinsam. Es muss angenommen werden, dass die Arten miteinander Bastarde bilden, die häufig und weit verbreitet sind. Aus Angola sind jetzt 3 Arten bekannt." He keys out the African species as follows:

1. Köpfe vielblütig.

2. Halme 3-rillig.

3. Halme in den Rillen  $\pm$  dicht mit weissen, spitzen Haaren und mit kopfigen Drüsenhaaren bedeckt.

4. Blätter an der Basis 0.5—1 mm. breit, 1—2.5 cm. lang, oberseits konkav, unterseits konvex, oft im Querschnitt elliptisch oder rundlich; Halme 3—20 cm. hoch.

5. Drei Anhängsel am Griffel vorhanden, in kopfigen Gebilden endigend.....S. wahlbergii.

5a. Anhängsel am Griffel fehlend.....S. schlechteri.

4a. Blätter breit (1.5—2.5 mm.) und flach, bis 8 cm. lang; Halme 30—50 cm. hoch.....S. poggeanus.

3a. Halme in den Rillen vollständig kahl; Sepalen der Blüten 3—3.3, evtl. bis 4 mm. lang, im mittleren Drittel beiderseits land und abstehend behaart, Sepalen der ♀ Blüten weiss, die der ♂ Blüten in der unteren Hälfte braun, oben weiss.....S. angolensis.

2a. Halme 4-rillig.....S. ngowensis.

1a. Köpfe wenigblütig (etwa 10 Blüten); Pflanzen immer nur 1—2 cm. hoch.....S. welwitschii.

Macbride (1931) makes some interesting comments relative to this and other genera: "The genus Syngonanthus was established by Ruhland.....to include those species of Paepalanthus with more or less connate (at the middle) petals in the case of the female flowers. This seems to me to be a character that serves most usefully as a

means of grouping merely sectionally the supposedly related forms. I think the natural genera in the family are defined only by the variation in the number of the stamens and by the number of the anther cells. On this basis Blastocaulon Ruhl....and Phylodoce Mart., widely separated by Ruhland because the petals of the latter are partially adnate, are to be merged. The only character in this case remaining to Phylodoce that defines it in contrast to Tonina Aubl. is the presence of well-developed petals and in the otherwise similar Lachnocaulon Kunth the petals are reduced to hairs. These four groups defined as genera constitute therefore from a purely disinterested standpoint one natural genus. As they exhibit some habitual differences their maintenance in regional treatments may sometimes be convenient."

SYNGONANTHUS ACIPHYLLUS (Bong.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 273. 1903.

Synonymy: Eriocaulon aciphyllum Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 636. 1831 [not E. aciphyllum Reichenb., 1863]. Paepalanthus aciphyllus Körn. in Mart., Fl. Bras. 3 (1): 438. 1863. Dupatya aciphylla (Bong.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya aciphylla Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Syngonanthus aciphyllus Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908.

Additional bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 636. 1831; Bong., Ess. Monog. Erioc. 35 & 36. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 579 & 612. 1841; D. Dietr., Syn. Pl. 5: 268. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 282 & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 438, 507, & 508. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 877 (1893) and imp. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 271, 273, 284, 289, & 292. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Alv. Silv., Fl. Mont. 1: 415. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 877 (1946) and imp. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 28, 32, 44, & 56. 1946; Moldenke, Phytologia 2: 498. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Phytologia 4: 296 & 311. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 105, 279, 285, 323, 351, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 877 (1960) and imp. 3, 2: 401. 1960; Moldenke, Fifth Summ. 1: 171 & 477 (1971) and 2: 492, 577, 635, 960, & 972. 1971; Moldenke, Phytologia 33: 25 (1976), 34: 277 (1976), and 35: 36. 1976.

This species appears to be based on L. Riedel 1042 from "in pratis sabulosus humidis Serra da Lapa", Minas Gerais, Brazil, although Bongard (1831) cites no number for the Riedel collection. An isotype in the Vienna herbarium was photographed there by Macbride as his type photograph number 29988. Bongard's original



description is "caulescens; caule brevissimo ramuloso; foliis caespitosis vaginis brevioribus lanceolato-linearibus acutis canaliculatis; pedunculis caespitosis vaginisque pubescentibus". He cites a plate 38, but this plate apparently never was published and probably exists only in the Leningrad herbarium or library.

The Eriocaulon aciphyllum of Reichenbach, referred to in the synonymy above, is a synonym of Paepalanthus subtilis Miq.

Ruhland (1903) refers this species to page "272" in the Steudel work (1840), but this is an error for page 282. He cites only the type collection and comments that the "Species P. niveo valde affinis". Silveira (1928) cites A. Silveira 451 from the Serra do Cipó, Minas Gerais, collected in 1905.

Recent collectors have found this species growing in sandy campos and in wet sand in an "area of gently sloping open hill-sides with sandy soil and sandstone boulders, mostly wet with seeping water, and a rocky area along a rushing stream at the base of the hill", at altitudes of 1200--1300 m. They found it in flower and fruit in February and September and describe the heads as white.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35448 (Ld, N); Hatschbach 27395 (S, Z).

SYNGONANTHUS ACOPANENSIS Moldenke, *Phytologia* 3: 41--42. 1948.

Bibliography: Moldenke, *Phytologia* 3: 41--42. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 65 & 212. 1949; Moldenke, *Phytologia* 4: 296. 1953; E. J. Salisb., *Ind. Kew. Suppl.* 11: 244. 1953; Moldenke, *Résumé* 73 & 490. 1959; Moldenke, *Fifth Summ.* 1: 127 (1971) and 2: 960. 1971; Moldenke, *Phytologia* 29: 388. 1975.

Recent collectors describe this plant as having "leaves in clumps, coriaceous or subcoriaceous, stiffly rigid or flexible, erect, in 2 planes", dull- or olive-green on both surfaces or "rich-green", and the flower-heads "dull-white with black at base" (blackish bracts) or "gray and white". They found it growing in wet soil of large swamps and in open forest on laterite deposits above a swamp, at altitudes of 2100--2500 meters, flowering in January, February, and June. Wurdack reports it "locally frequent" in small clumps on the upper "cumbre" and in deep canyons. Wurdack 34213 is a mixture with Paepalanthus fraternus N. E. Br. and has obscurely appressed-pilose or subglabrate peduncles.

Material of S. acopanensis has been misidentified and distributed in some herbaria as Leiothrix sp.

Additional citations: VENEZUELA: Bolívar: Cardona 2280 (Ve-isotype); J. A. Steyermark 75850 (Z), 75925 (Ss); Steyermark & Wurdack 804 (N); Wurdack 34213, in part (Mu, N).

SYNGONANTHUS ALBOPULVINATUS (Moldenke) Moldenke, *Phytologia* 20: 243. 1970.

Synonymy: Paepalanthus albopulvinatus Moldenke in Maguire & Phelps, *Bol. Soc. Venez. Cienc. Nat.* 14: 10. 1952. Syngonanthus

albopulvinatus Moldenke, Phytologia 4: 296, hyponym. 1953.

Bibliography: Moldenke in Maguire & Phelps, Bol. Soc. Venez. Cienc. Nat. 14: 10. 1952; Moldenke, Phytologia 4: 296. 1953; Moldenke, Résumé 73 & 490. 1959; G. Taylor, Ind. Kew. Suppl. 12: 101. 1959; Moldenke, Phytologia 20: 243. 1970; Moldenke, Biol. Abstr. 52: 714. 1971; Moldenke, Excerpt. Bot. A. 13: 445. 1971; Moldenke, Fifth Summ. 1: 127 & 131 (1971) and 2: 577 & 960. 1971; Heslop-Harrison, Ind. Kew. Suppl. 15: 133. 1974; Moldenke, Phytologia 34: 277. 1976.

This species is based on Maguire, Phelps, Hitchcock, & Budowski 31774 from a Bonnetia savanna on a "cumbre" at 2000 meters altitude at Cafío Guaviarito, Río Manapiare, Río Ventuari, Amazonas, Venezuela, collected on February 4, 1951, and deposited in the Britton Herbarium at the New York Botanical Garden.

Recent collectors describe the plant as an herb, 4 inches tall, the leaves in a rosette, spreading, rigid, gray-green, softly hairy, and the flower-heads white or gray-white. They have encountered it in open xeromorphic scrub on white sand, on open savannas with Trachypogon, Echinolaena, and Paspalum dominant, with a narrow strip of gallery forest along the rivers, the soil with the top 20 cm. a sand and organic material mixture, below which is a 1 m. zone of yellow sand, and "locally frequent" on dry sand banks along rivers, at altitudes of 1300--2000 meters, flowering from December to February.

Additional citations: VENEZUELA: Bolívar: E. Davidse 4710 (Z); Steyermark & Wurdack 363 (N). GUYANA: Herb. Univ. Georgetown Bio. 106-20 (N).

SYNGONANTHUS ALLENI Moldenke, Bull. Torrey Bot. Club 77: 390. 1950.

Bibliography: Moldenke, Bull. Torrey Bot. Club 77: 390. 1950; Moldenke, Phytologia 4: 296. 1953; E. J. Salisb., Ind. Kew. Suppl. 11: 244. 1953; Moldenke, Résumé 68, 73, & 490. 1959; Moldenke, Résumé Suppl. 1: 5 & 6 (1959) and 2: 5. 1960; Moldenke, Biol. Abstr. 35: 2177. 1960; Hocking, Excerpt. Bot. A. 4: 593. 1962; Moldenke, Fifth Summ. 1: 119 & 171 (1971) and 2: 960. 1971.

This pretty species is based on P. H. Allen 3149 from Yapoboda, Vaupés, Colombia, collected on December 10, 1943, and deposited in the United States National Herbarium in Washington. Hemming found it on the Cachimbo hills in "campo cerrado" interspersed with rainforest near rivers in sandy soil of open clearing of airfield, altitude 1390 feet, on the Pará-Mato Grosso border, flowering in July.

Additional citations: BRAZIL: Pará: Hemming 7 (Z); Sick 669 [Herb. Brad. 4614] (Bd), s.n. [Serra do Cachimbo, 5.57; Herb. Brad. 4704] (Bd).

SYNGONANTHUS ALLENI var. BRASILIENSIS Moldenke, Phytologia 7: 121. 1960.

Bibliography: Moldenke, Biol. Abstr. 35: 2177. 1960; Moldenke,

Phytologia 7: 121. 1960; Moldenke, *Résumé Suppl.* 2: 5. 1960; Hocking, *Excerpt. Bot. A.* 4: 593. 1962; Moldenke, *Fifth Summ.* 1: 171 (1971) and 2: 960. 1971.

Citations: BRAZIL: Pará: Egler & Raimundo s.n. [W. A. Egler 968; Herb. Mus. Goeldi 23628] (Bd--12296--isotype, Z--type).

SYNGONANTHUS ALLENI var. PARVUS Moldenke, *Mem. N. Y. Bot. Gard.* 8: 99. 1953.

Bibliography: Moldenke, *Mem. N. Y. Bot. Gard.* 8: 99. 1953; Moldenke, *Phytologia* 4: 296. 1953; Moldenke, *Résumé* 73 & 490. 1959; Moldenke, *Fifth Summ.* 1: 127 (1971) and 2: 960. 1971.

This variety differs from the typical form of the species in its shorter stems, glabrous attenuate leaves, few and shorter bracts, fewer peduncles, and the heads and flowers smaller. The type of the variety was collected by B. Maguire, R. S. Cowan, and J. J. Wurdack (no. 29238) in shallow wet sand and on rock outcrop behind (east of) Hotel Amazonas, Puerto Ayacucho, Amazonas, Venezuela, on October 24, 1950, and is deposited in the Britton Herbarium at the New York Botanical Garden.

Additional citations: VENEZUELA: Amazonas: Foldats 3566 (Ve).

SYNGONANTHUS AMAPENSIS Moldenke, *Phytologia* 5: 90--91. 1954.

Bibliography: Moldenke, *Phytologia* 5: 90--91. 1954; Moldenke, *Résumé* 105 & 490. 1959; G. Taylor, *Ind. Kew. Suppl.* 12: 138. 1959; Moldenke, *Fifth Summ.* 1: 171 (1971) and 2: 960. 1971.

Citations: BRAZIL: Amapá: Black & Lobato 50-9492 (Z--type); Murça Pires & Cavalcante 52407 (N, N, N, N).

SYNGONANTHUS AMAZONICUS Moldenke, *Phytologia* 3: 42--43. 1948.

Bibliography: Moldenke, *Phytologia* 3: 42--43. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 90 & 212. 1949; Moldenke, *Phytologia* 4: 296. 1953; E. J. Salisb., *Ind. Kew. Suppl.* 11: 244. 1953; Moldenke, *Résumé* 105 & 490. 1959; Van Donselaar, *Wentia* 14: 40. 1965; Moldenke, *Fifth Summ.* 1: 171 (1971) and 2: 960. 1971.

Van Donselaar (1965) encountered this species in a Syngonantho-xyridion ecologic association.

SYNGONANTHUS ANDROSACEUS (Griseb.) Ruhl. in *Urb.*, *Symb. Ant.* 1: 488. 1900.

Synonymy: Paepalanthus androsaceus Griseb., *Cat. Pl. Cub.* 225. 1866. Paepalanthus androsaceus var. flavescens Griseb., *Cat. Pl. Cub.* 225. 1866. Syngonanthus androsaceus Ruhl. apud Thiselt.-Dyer, *Ind. Kew. Suppl.* 2: 180. 1904.

Additional bibliography: Griseb., *Cat. Pl. Cub.* 225. 1866; Sauv., *Anal. Acad. Sci. Habana* 8: 50. 1871; Sauv., *Fl. Cub.* 165. 1871; Gomez de la Maza, *Not. Bot. Sist.* 49 & 110. 1893; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 1, 2: 401. 1894; Millsp., *Publ. Field Mus. Bot.* 1: 426. 1900; Ruhl. in *Urb.*, *Symb. Ant.* 1: 487 & 488. 1900; Ruhl. in *Engl.*, *Pflanzenreich* 13 (4-30): 245,

257, 289, & 293. 1903; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 180. 1904; Jennings, Ann. Carnegie Mus. 11: 90. 1917; Moldenke, N. Am. Fl. 19: 43 & 44. 1937; Moldenke, Phytologia 1: 335. 1939; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 401. 1946; León, Fl. Cuba 1: 283. 1946; Moldenke, Known Geogr. Distrib. Erioc. 5, 44, & 56. 1946; Moldenke, Alph. List Cit. 1: 3, 24, 25, 86, & 186 (1946), 2: 470, 486, & 648—650 (1948), 3: 930 (1949), and 4: 1084, 1085, 1144, & 1304. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 45 & 212. 1949; Moldenke, Phytologia 4: 208 & 296. 1953; Moldenke, Résumé 53, 323, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 401. 1960; Moldenke, Fifth Summ. 1: 98 (1971) and 2: 577 & 960. 1971; León & Alain, Fl. Cuba, imp. 2, 1: 283 & 435. 1974; Moldenke, Phytologia 33: 184 (1976) and 34: 277. 1976.

Ruhland (1900) distinguishes this species from the related S. lagopodioides (Griseb.) Ruhl. as follows:

1. "Bracteae involucrantes plus mimus fulva-flavidae, basi ciliolatae; folia olivaceo-virentia, plerumque 3.5 cm. longa....  
S. androsaceus.
- 1a. "Bracteae involucrantes pallide stramineo-flavae, glabrae; folia laete viridia, plerumque modo 2 cm. longa.....  
S. lagopodioides.

He comments that "Equidem varietates Grisebachianas distinguere nequeo. Specimini mihi suppetentia colore foliorum bractearumque involucrantium plane congruunt. Species Syngonantho flavidulo (Koern.) Ruhl. proxima." He cites only C. Wright 3235 & 3236 from Cuba. Jennings (1917) cites Blain 151 from the Isle of Pines and gives the general distribution of the species as "Western Cuba and the Isle of Pines". Van Hermann notes that it is "very plentiful in wet sandy savannas", refers to the flower-heads as white, and found it in flower and fruit in January. The type collection, C. Wright 3235, is a mixture with a grass (at least insofar as the University of California specimen of this number is concerned).

Additional & emended citations: CUBA: Pinar del Río: C. F. Baker 2101 (B); León 19415 (Um—10064); Moldenke & Moldenke 19882 (Ac, Au, Bi, Bm, Bm, Bs, Ca, Ca, Fg, Ft, Gg, Hk, Ip, L, Ld, Le, Lk, Lw, Mi, Mm, Mu, Ok, Sm, Ss, Tk, Ut, Ws, Ws, Z); Van Hermann 570 (W—1146897); C. Wright 3235, in part (Ca—937001—isotype, T—isotype).

SYNGONANTHUS ANGOLENSIS H. Hess, Bericht. Schweiz. Bot. Gesell. 65: 193—194 & 198, text fig. 7 & 8, pl. 9, fig. 10 & 13. 1955.

Bibliography: H. Hess, Bericht. Schweiz. Bot. Gesell. 65: 192—198, text fig. 7 & 8, pl. 9, fig. 10 & 13. 1955; Anon., Assoc. Étud. Tax. Fl. Afr. Trop. Index 1955: 30. 1956; Moldenke, Phytologia 5: 341. 1956; Moldenke, Résumé 147, 351, & 490. 1959; G. Taylor, Ind. Kew. Suppl. 12: 138. 1959; Moldenke, Phytologia 18: 256. 1969; Moldenke, Fifth Summ. 1: 244 & 635 (1971) and 2: 960. 1971;

Moldenke, *Phytologia* 34: 278. 1976.

Illustrations: H. Hess, *Bericht. Schweiz. Bot. Gesell.* 65: 198, text fig. 7 & 8, pl. 9, fig. 10 & 13. 1955.

This species was based by Hess (1955) on H. Hess 52/2098 from "Am Rio Luassinga, 60 km östlich Vila Serpa Pinto (Menongue)", Bié, Angola, at 1400 meters altitude, collected on June 28, 1952. He cites also H. Hess 52/2084, 52/2086, 52/2111, & 52/2112 from Bié and 52/2151 from Huila, Angola, and says that it occurs on "Sandiger und sandig-mooriger Boden entlang Flüssen; ziemlich trocken (Böschungen) bis überschwemmt". He comments further: "Aus dem umfangreichen Material können nur Abweichungen in Grösse und Form der Blätter festgestellt werden, die durch den Standort bedingt sind. So sind bei Nr. 52/2084, die an einer sandigen, trockenen Böschung des Rio Cuatir gesammelt wurden, die Blätter nur etwa 1 cm lang und im Querschnitt elliptisch, während bei Nr. 52/2086, die etwas weiter unten im 2—4 cm tiefen Wasser stand, die Blätter bis 6 cm lang und flach sind. Die gleiche Beobachtung wurden am Rio Quiriri gemacht: Nr. 52/2111 entwickelte sich submers und hat bis 12 cm lange Blätter; Nr. 52/2112 wurde daneben auf trockenen Sand gesammelt. Die Blätter dieser Pflanzen sind etwa 3 cm lang.

"Verbreitung: Angola: Nur entlang den Seitenflüssen des Rio Cubango (Rio Cuatir, Rio Luassinga, Rio Quiriri) sowie an einem Seitenfluss des Rio Cunene (Rio Quangué) beobachtet und gesammelt.

"Verwandschaftsverhältnisse: Syngonanthus angolensis unterscheidet sich von allen bekannten Syngonanthus-Arten Afrikas durch seine vollständig kahlen Halme, die verschieden gefärbten, 3—3,3 mm langen (bei Fruchtreife wahrscheinlich 4 mm lang) Sepalen, die im mittleren Drittel dorsal und ventral lang behaart sind. Diese Merkmale sind konstant und erlauben, die Art eindeutig zu charakterisieren.

"Die systematischen Unterscheide gegenüber Syngonanthus Poggeanus und S. Wahlbergii sind aber nicht so gross, dass hybridogene Zwischenformen nicht denkbar wären. Mutmassliche Bastarde zwischen den 3 Syngonanthus-Arten wurden verschiedentlich gefunden und sind im folgenden beschrieben." [Cfr. xS. hessii Moldenke and xS. hybridus Moldenke].

SYNGONANTHUS ANGUSTIFOLIUS Alv. Silv., *Fl. Mont.* 1: 370—371, pl. 236. 1928.

Synonymy: Syngonanthus angustifolia Alv. Silv. ex Moldenke, *Known Geogr. Distrib. Erioc.* 56, in syn. 1946.

Bibliography: Alv. Silv., *Fl. Mont.* 1: 370—371 & 415, pl. 236. 1928; Wangerin in Just, *Bot. Jahresber.* 57 (1): 477. 1937; Fedde in Just, *Bot. Jahresber.* 57 (2): 895. 1938; A. W. Hill, *Ind. Kew. Suppl.* 9: 271. 1938; Worsdell, *Ind. Lond. Suppl.* 2: 426. 1941; Moldenke, *Known Geogr. Distrib. Erioc.* 17 & 56. 1946; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 90 & 212. 1949; Moldenke, *Résumé* 105, 351, & 490. 1959; Moldenke, *Fifth Summ.* 1: 171

(1971) and 2: 635 & 960. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 236. 1928.

This species is based on A. Silveira 743 from "In campis arenosis in Serra da Babylonia, prope Passos", Minas Gerais, Brazil, collected in April, 1925, and deposited in the Silveira herbarium. In his original description Silveira (1928) comments that the "Species a S. niveo propter pilositatem foliorum vaginarumque precipue differt". It is known thus far only from the original collection.

It should be noted that Wangerin (1937) erroneously cites the plate number as "CCXXXV".

SYNGONANTHUS ANOMALUS (Körn.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 267. 1903.

Synonymy: Paepalanthus anomalus Körn. in Mart., Fl. Bras. 3 (1): 458. 1863. Dupatya anomala (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya anomala Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Syngonanthus anomalus Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908. Syngonanthus anomalus var. stolonacea Herzog in Fedde, Repert. Spec. Nov. 29: 213, hyponym. 1931. Syngonanthus anomalus f. terrestris Herzog in Fedde, Repert. Spec. Nov. 29: 213, hyponym. 1931. Syngonanthus anomalus var. stolonaceus Herzog ex Moldenke, Known Geogr. Distrib. Erioc. 17 & 56, nom. nud. 1946. Syngonanthus esmeraldae Ruhl. ex Moldenke, Phytologia 4: 297, in syn. 1953.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 279, 458, & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 3, 264, 267, 289, & 293. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Herzog in Fedde, Repert. Spec. Nov. 29: 213. 1931; Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 20. 1939; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 6, 17, 44, & 56. 1946; Moldenke, Alph. List Cit. 3: 956. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 65, 66, 90, & 212. 1949; Moldenke, Mem. N. Y. Bot. Gard. 8: 99. 1953; Moldenke, Phytologia 4: 297. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 73, 76, 105, 323, 351, 490, & 491. 1959; Moldenke, Résumé Suppl. 1: 20. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 401. 1960; Moldenke, Résumé Suppl. 10: 2 (1964) and 12: 3. 1965; Van Donselaar, Meded. Bot. Mus. Rijksuniv. 306: 397 & 402. 1968; Oberwinkler, Pterid. & Sperm. Venez. 8 & 52. 1970; Moldenke, Fifth Summ. 1: 119, 127, 131, 132, & 171 (1971) and 2: 577, 582, 635, 636, & 960. 1971; Moldenke, Phytologia 29: 318 (1974), 31: 385 & 407 (1975), and 34: 277. 1976.

This species is based on Spruce 2039 from along the Rio Negro between Barcellos and São Gabriel, Amazonas, Brazil. An isotype

in the Copenhagen herbarium was photographed there by Macbride as his type photograph number 22277, in part [the other part represents Spruce 3259, type collection of S. esmeraldae Ruhl.].

Herzog's var. stolonaceus is based on Lützelburg 23739 from Jutica, Uaupés, Pará, Brazil, while his f. terrensis is based on Lützelburg 22160 & 22184 from Uauaucá, Rio Negro, Amazônia, collected on September 28, 1911, all deposited in the Munich herbarium. It seems virtually impossible to find any constant characters to differentiate these two supposed infraspecific taxa from the typical S. anomalus. Macbride photographed 23739 in the Munich herbarium as his type photograph number 18740. Lützelburg 23299b, cited below, may actually be a cotype of f. natans, but the other number so labeled by Herzog is plainly S. macrocaulon Ruhl., so I prefer to regard the latter as the actual type of f. natans and the former as a mere misidentification. Similarly, I regard Herzog's S. anomalus f. glabriusculus and f. natans glabripes as belonging in the synonymy of S. macrocaulon.

Gleason, in his unpublished Flora of British Guiana, describes S. anomalus as follows: "Stems more or less tufted, often irregularly branched, 3--10 cm. long; leaves rather crowded toward the end of the branches, narrowly linear, 10--15 mm. long; peduncles scattered, filiform, 2--5 cm. long, twisted, minutely pubescent; sheaths long-oblique, pubescent, the lamina acuminate; heads sub-hemispheric, 3 mm. wide; bracts obovate, obtuse or rounded." He cites only Jenman 937 from Kaieteur Falls, but gives its overall distribution as "Venezuela, northern Brazil". He distinguishes it from related species in Guyana as follows:

1. Subtending bracts present; leaves 1 mm. wide or less.
2. Principal leaves about 15 mm. long, very thin and lax; peduncular sheaths acuminate.....S. anomalus.
- 2a. Principal leaves about 5 mm. long, firm, prominently nerved; peduncular sheaths obtuse.....S. brevifolius.
- 1a. Subtending bracts none; leaves 2--5 mm. wide....S. caulescens.

Ruhland (1903) cites only Spruce 3259 from Venezuela and Spruce 2039 from Amazônia, Brazil, and comments that the "Species a cl. Koernicke ad Psilosepalum collocata structura petalorum floris ♂ huc ducenda". Herzog (1931) distinguished two of his proposed infraspecific taxa as follows: "var. stolonacea. A typo differt caulibus stolonaceo-repentibus, ramis floriferis brevissimis erectis parvifoliis.....Bei manchen Blüten kommen appendices styli vor die beim Original und bei n. 22147 fehlen. Ihre kurze und keulige Form spricht aber für rudimentaire Natur, ebenso wie das unregelmässige Auftreten." For f. terrestris he says "in der Blüte vollkommen mit der f. natans übereinstimmend, ebenso in der Form der Brakteen, Behaarung der Pedunculi (s. Original!, Beschreibung ungenau!), den lockeren Scheiden etc."

Recent collectors describe this species as an herb with white inflorescence-heads, white flowers, and white stamens. They have

found it growing on sand and in muddy places at river margins, in sandy soil in blackwater-flooded clearings beside rivers, and "frequent" on marshy riverbanks, at altitudes of 120--500 meters, flowering in March and from August to January, and fruiting in March, October, and November. Irwin and his associates speak of it as an "herb. forming moss-like mats, locally abundant in savannas", Maguire and his associates report it as "frequent at water's edge" and "locally abundant in water on sandy moist riverbanks", while Junk describes it as an "erva imersa na agua alta". Prance asserts that he found it "flowering above and below water".

Herbarium material has been misidentified and distributed in some herbaria as S. biformis (N. E. Br.) Gleason. On the other hand, the Lützelburg 23182, distributed as S. anomalus, is more probably S. huberi Ruhl., while C. D. K. Cook 214 is S. philodicoides (Körn.) Ruhl.

Additional citations: COLOMBIA: Vaupés: Humbert 27453 (P); Schultes, Baker, & Cabrera 18147 (N, W--2198894). VENEZUELA: Amazonas: Spruce 3259 [Macbride photo 22277, in part] (B, B, W--photo); Vareschi & Maegdefrau 6709 (Ve--42897); Maguire, Wurdack, & Bunting 36645 (N); Maguire, Wurdack, & Maguire 42634 (N, S). Bolívar: Agostini 264 (Lw); Hertel & Oberwinkler 15202 (Mu), 15214b (Mu). GUYANA: Sandwith 1257 (Ut--44225A). SURINAM: Irwin, Prance, Soderstrom, & Holmgren 55267 (N, S). BRAZIL: Amapá: Fróes 26056 (Z). Amazônas: Fróes 25388 (N), 27915 (Z), 28467 (Mu, Z), 28717 (Z); Fróes & Addison 29241 (Z); Junk 135 (Ld); Lützelburg 22160 (Mu), 22184 [N. Y. Bot. Gard. Type Photo Neg. N.S. 8841] (Mu, N--photo, Z--photo), 23299b [N. Y. Bot. Gard. Type Photo Neg. N.S. 8840] (Mu, N--photo, Z--photo); Prance, Berg, Bisby, Steward, Monteiro, & Ramos 17814 (Ld); Prance, Maas, Woolcott, Coêlho, Monteiro, & Ramos 15233 (Ac, N); Prance, Maas, Woolcott, Monteiro, & Ramos 15541 (Ld, N); Prance, Pennington, Nelson, & Ramos 21646 (Ld); R. E. Schultes 8904 (Z); Spruce 2039 [Macbride photo 22277, in part] (B--isotype, W--photo of isotype). Pará: Egler & Raimundo s.n. [W. A. Egler 794; Herb. Mus. Goeldi 23632] (Bd--12293, Z); Lützelburg 23739 [Macbride photos 18740] (Mu, N--photo, N--photo, W--photo); Murça Pires & Silva 4347 (Z), 4380 (N, Z). LOCALITY OF COLLECTION UNDETERMINED: Herb. Inst. Agron. Norte 6 (Z).

SYNGONANTHUS ANTHEMIFLORUS (Bong.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 258--259, fig. 37 [as "anthemidiflorus"]. 1903.

Synonymy: Eriocaulon anthemiflorum Bong., Mem. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 636. 1831. Paepalanthus anthemidiflorus Kunth, Enum. Pl. 3: 535. 1841. Eriocaulon chrysanthemiflorum Schnitzl., Iconogr. 1: pl. 47, fig. 3 & 6. 1847. Eriocaulon anthemidiflorum Bong. apud D. Dietr., Syn. Pl. 5: 263. 1852. Eriocaulon arctotiflorum Steud., Syn. Pl. Glum. 2: [Cyp.] 282.



1855. Eriocaulon anthemiflorum Clauss. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 282 & 333, in syn. 1855. Paepalanthus anthemidiflorus var. ♂ Körn. in Mart., Fl. Bras. 3 (1): 440--441. 1863. Paepalanthus anthemidiflorus var. ♀ Körn. in Mart., Fl. Bras. 3 (1): 440--441. 1863. Dupatya anthemidiflora (Bong.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya anthemidiflora Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Syngonanthus anthemidiflorus (Bong.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 258. 1903. Syngonanthus anthemidiflorus Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908. Syngonanthus anthemidiflorus var. ♀ Körn. apud Alv. Silv., Fl. Mont. 1: 415. 1928. Syngonanthus anthemiflorus (Bong.) Ruhl. ex Moldenke, Known Geogr. Distrib. Erioc. 17 & 56. 1946. Paepalanthus anthemidifolius Körn. ex Moldenke, Résumé Suppl. 3: 34, in syn. 1962. Eriocaulon anthemidiflorus Bong. ex Moldenke, Phytologia 31: 397, in syn. 1975. Paepalanthus anthemiflorus Bong. ex Moldenke, Phytologia 31: 403, in syn. 1975. Paepalanthus anthemiflorus Körn. ex Moldenke, Phytologia 31, 403, in syn. 1975. Paepalanthus dichroanthelus Mart. ex Moldenke, Phytologia 31: 404, in syn. 1975.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 636. 1831; Bong., Ess. Monog. Erioc. 35 & 36 (1831) and 65--66 & 228-229, pl. 15. 1832; Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 2: 228--229, pl. 15. 1832; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 535, 578, 579, 612, & 624. 1841; Schnitzl., Iconogr. 1: pl. 46, fig. 5 & 6\*. 1845; D. Dietr., Syn. Pl. 5: 263. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 282, 283, & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 283, 284, 440--441, 500, & 507, pl. 57, fig. 2. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1023. 1883; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 24. 1888; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 877 (1893) and imp. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 12, 245, 258--259, 284, 285, 289, & 293, fig. 37. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Molfino, Physis 6: 362. 1923; Alv. Silv., Fl. Mont. 1: 415. 1928; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 44. 1930; Stapf, Ind. Lond. 3: 90 (1930), 4: 518 (1930), and 6: 248. 1931; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Castell. in Descole, Gen. & Sp. Pl. Argent. 3: 71, 92--94, & 104, pl. 19 & 21. 1945; Abbiatti, Rev. Mus. La Plata Bot., ser. 2, 6: [311], 312, & 339. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 877 (1946) and imp. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 17, 28, 32, 33, 44, & 56. 1946; Moldenke, Phytologia 2: 374 & 375 (1947) and 2: 498. 1948; Moldenke, Alph. List Cit. 3: 710. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90, 105, & 212. 1949; Moldenke, Phytologia 4: 208 & 297. 1953; Moldenke in Dawson, Los Angeles Co. Mus. Contrib. Sci. 7: 6. 1957; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 105, 126, 279, 285, 286, 323, 351,

418, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 877 (1960) and imp. 3, 2: 401. 1960; Moldenke, Résumé Suppl. 3: 34. 1962; Melchior in Engl., Syllab. Pfl., ed. 12, 2: 556, fig. 230 L. 1964; Moldenke, Fifth Summ. 1: 171, 200, & 478 (1971) and 2: 493, 496, 577, 635, 773, & 960. 1971; Moldenke, Phytologia 31: 397, 403, 404, & 407 (1975), 33: 25 (1976), and 34: 259. 1976.

Illustrations: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 2: [Ess. Monog. Erioc.] pl. 15. 1832; Schnitzl., Iconogr. 1: pl. 46, fig. 5 & 6\* (in color). 1845; Körn. in Mart., Fl. Bras. 3 (1): pl. 57, fig. 2. 1863; Ruhl. in Engl., Pflanzenreich 13 (4-30): 258, fig. 37. 1903; Castell. in Descole, Gen. & Sp. Pl. Argent. 3: pl. 19. 1945; Melchior in Engl., Syllab. Pflanzenfam., ed. 12, 2: 556, fig. 230 L. 1964.

This species was based on L. Riedel 1409 from "in paludosis Serra da Lapa", Minas Gerais, Brazil, deposited in the Leningrad herbarium. Bongard's original (1831) description is "caulescens; caule brevi simplici nudo; foliis radicalibus confertis brevissimis linearibus obtusiusculis; pedunculo terminali subsolitario vaginae pubescente". Actually the number of peduncles per plant varies from 1 to 6. Ruhland (1903) cites from Minas Gerais: Clausen 66 & 160; Glaziou 8496, 8504, 15554, 19980, 19981, & 19982; L. Riedel 1409; Schwacke 8493 & 14543; Ule s.n.; and Weddell 1895. He comments that the "Species magnitudine valde variabilis". In his key he distinguishes it from the very similar S. laricifolius as follows:

1. "Folia ramorum dense et persistente pilosa, omnia glaucescentia; vaginae dense et longiuscule pubescentes. S. laricifolius."
- 1a. "Folia ramorum supra puberula, subtus calva; vaginae glabrisculae".....S. anthemiflorus."

It should be noted, however, that the original description of the species by Bongard (1831) describes the sheaths of S. anthemiflorus as pubescent and in all the specimens examined by me they are decidedly puberulent or short-pubescent. The single collection seen by me with completely glabrous leaves and sheaths is described below as var. subglabrescens Moldenke.

It should also be noted that the illustration of this species in Schnitzlein's work (1845) is referred to as fig. "3" in the text but is labeled "5" on the plate. The work is sometimes cited as "1847", but according to Stapf (1930) the plate in question here was issued in 1845.

Recent collectors describe S. anthemiflorus as an herb. 10--25 cm. tall, tufted, the inflorescences 7--20 cm. tall, and the flower-heads white, cream, or yellow. They have found it growing on wet or dry campos, in sandy marshy places, in swamps, and on outcrops in upland campos and adjacent rocky slopes, at altitudes of 1050--1350 meters, flowering from January to April and in June and November. Silve reports it very frequent on sandstone outcrops; Irwin and his associates encountered it on wet campos in a region of sandy and gravelly campos and cerrado on outcrops. Anderson and his associates found it in sand on the banks of inter-

mittent creeks and in open places in an area of rocky campo and cerrado, sloping down to a wet-sand meadow adjacent to gallery forest along streams, in sandy soil with sandstone outcrops. The vernacular name, "sempre-viva", is recorded for it. Silveira (1928) cites A. Silveira 214 from Diamantina, Minas Gerais, collected in 1918.

Eriocaulon anthemiflorum Clauss. is based on P. Clausen 160 [vel 1160] from Minas Gerais.

Material of S. anthemiflorus [I see no valid reason to change the original spelling of this specific epithet on the excuse of "correcting" it] has been misidentified and distributed in some herbaria as S. laricifolius (G. Gardn.) Ruhl. On the other hand, the Dawson 14631, distributed as immature S. anthemiflorus and so cited by me in my 1957 work, proves to be S. decorus Moldenke, while Irwin, Fonsêca, Souza, Reis dos Santos, & Ramos 28089 is the type collection of S. anthemiflorus var. subglabrescens Moldenke.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 36202 (Ld, N); Archer & Mello Barreto 4930 [Herb. Jard. Bot. Belo Horiz. 17512, in part; Herb. U. S. Nat. Arb. 177448] (W--2121741); Black & Magalhães 51-11907 (Z); P. Clausen 7 (Mi, P), 160 (B), s.n. [Itabira do Campo] (B); Glaziou 19981 (Ca--947115, N, W--1124165); Hatschbach, Anderson, Barneby, & Gates 36442 (Z); Héringer & Castellanos 6142 (B); Irwin, Maxwell, & Wasshausen 19901 (Ld, N); Irwin, Onishi, Fonsêca, Souza, Reis dos Santos, & Ramos 25464 (Ac, N, W--2759054); Martius 889 (B, Mu), s.n. [Tejuco, distr. adamant.] (Mu, Mu), s.n. (B); Murça Pires & Black 3327 (B); E. Pereira 2808 [Pabst 3644; Herb. Brad. 3842] (Sm); L. Riedel 1409 (B--isotype, Ut--390--isotype); J. B. Silva 586 [Herb. Set. Lag. 723] (Ba, Ld); L. B. Smith 6845 (Z). State undetermined: Herb. Zuccarini s.n. [Erasília] (Mu). MOUNTED ILLUSTRATIONS: Bong., Mém. Acad. Imp. Sci. St. Péters., ser. 6, 2: pl. 15. 1832 (N, Z); Castell. in Descole, Gen. & Sp. Pl. Argent. 3: pl. 19. 1945 (N); Körn. in Mart., Fl. Bras. 3 (1): pl. 57, fig. 2. 1863 (B, B, N, Z); drawings by Körn. (B).

SYNGONANTHUS ANTHEMIFLORUS var. SUBGLABRESCENS Moldenke, *Phytologia* 34: 259, nom. nud. 1976; var. nov.

Bibliography: Moldenke, Phytologia 34: 259. 1976.

Haec varietas a forma typica speciei foliis caulinis raisque et vaginis glabratis vel glabrescentibus differt.

This variety differs from the typical form of the species in having its basal and stem leaves and the sheaths glabrous or glabrescent. The peduncles are up to 22 cm. long and densely appressed-pilosulous.

The type of the variety was collected by H. S. Irwin, S. F. da Fonsêca, R. Souza, R. Reis dos Santos, and J. Ramos (no. 28089) on the campo in an area of cerrado, campo, and gallery forest, at

1050 meters altitude, about 10 km. north of São João da Chapada on the road to Inhai, Minas Gerais, Brazil, on March 22, 1970, and is deposited in the Britton Herbarium at the New York Botanical Garden. The collectors describe the plant as an herb to about 25 cm. tall, with white flower-heads.

Citations: BRAZIL: Minas Gerais: Irwin, Fonsêca, Souza, Reis dos Santos, & Ramos 28089 (Ld—isotype, N—type, W—2759053—isotype).

SYNGONANTHUS APPRESSUS (Körn.) Ruhl. in Engl., Pflanzenreich 13 (4-30): 269. 1903.

Synonymy: Paepalanthus appressus Körn. in Mart., Fl. Bras. 3 (1): 468, pl. 59, fig. 2. 1863. Dupatya appressa (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya appressa Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Syngonanthus appressus Ruhl. apud Prain, Ind. Kew. Suppl. 3: 175. 1908. Eriocaulon imbricatum Riedel ex Moldenke, Résumé Suppl. 1: 17, in syn. 1959 [not Syngonanthus imbricatus (Körn.) Ruhl., 1903].

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 468, 500, & 507, pl. 59, fig. 2. 1863; Körn. in Warm., Vidensk. Meddel. Nat. Foren. Kjöbenh. 23: 315. 1871; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 246, 269, 289, & 293. 1903; Prain, Ind. Kew. Suppl. 3: 175. 1908; Alv. Silv., Fl. Mont. 1: 415. 1928; Stapf, Ind. Lond. 4: 518. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 17, 28, 44, & 56. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; Moldenke, Phytologia 4: 297. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 105, 279, 323, & 491. 1959; Moldenke, Résumé Suppl. 1: 17. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 401. 1960; Moldenke, Résumé Suppl. 3: 14. 1962; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 149 & 158. 1969; Moldenke, Fifth Summ. 1: 171 & 178 (1971) and 2: 503, 577, & 960. 1971; Angely, Fl. Anal. & Fitoogeogr. Est. S. Paulo, ed. 1, 6: 1161 & Ind. 20 & 28. 1972; Anon., Biol. Abstr. 56 (3): B.A.S.I.C. S.258. 1973; Moldenke, Biol. Abstr. 56: 1243. 1973; Moldenke, Phytologia 25: 118 & 230. 1973.

Illustrations: Körn. in Mart., Fl. Bras. 3 (1): pl. 59, fig. 2. 1863.

This species was based on G. Gardner 5255 and L. Riedel 2302, the former from Minas Gerais and the latter from São Paulo, Brazil, deposited in the Munich herbarium. In my 1953 work I erroneously cited both collections as from São Paulo. In his 1871 work Körnicke cites Warming s.n. from Lagoa Santa, while in 1928 Silveira cited A. Silveira 218 from Belo Horizonte, both localities being in Minas Gerais. Körnicke comments about the Warming collection: "Folia infima specimimum glabriuscula, interdum longiora lanceolato-linearria patentia vel patentissima, nec re vera

recurvata (loco natali humidior?)".

Eriocaulon imbricatum of Riedel is based on L. Riedel 2302 in the Berlin herbarium.

Syngonanthus appressus has been found in wet places, swamps, sandy soil in marshes, and along brooks, flowering in June, August, and September, and fruiting in August. Ruhland (1903) cites only G. Gardner 5255, L. Riedel 2302, and A. Silveira 2020.

Additional & emended citations: BRAZIL: Goiás: Ule 234 (P, P). Minas Gerais: G. Gardner 5255 (B--cotype, N--cotype, N--photo of cotype, S--cotype, W--1067049--cotype, Z--photo of cotype). São Paulo: Eiten, Eiten, Felipe, & Freitas Campos 3029 (N); Freitas Campos 3 (Z), 5 (N); L. Riedel 2302 (B--cotype, Mu--cotype, Ut--391--cotype). MOUNTED ILLUSTRATIONS: drawings by Körnicke (B, B); Körn. in Mart., Fl. Bras. 3 (1): pl. 59, fig. 2. 1863 (B, N, Z).

SYNGONANTHUS APPRESSUS var. CHAPADENSIS Moldenke, Phytologia 25: 118--119. 1973.

Bibliography: Anon., Biol. Abstr. 56 (3): B.A.S.I.C. S.258. 1973; Moldenke, Biol. Abstr. 56: 1243, 1973; Moldenke, Phytologia 25: 118--119 & 230. 1973.

Collectors have encountered this plant in gallery forests and adjacent wet campo, at 1250 m. altitude, flowering in March.

Citations: BRAZIL: Goiás: Irwin, Harley, & Smith 32149 (N--isotype, Z--type), 32203 (Ld, N).

SYNGONANTHUS AQUATICUS Alv. Silv., Fl. Serr. Min. 74, pl. 29. 1908.

Bibliography: Alv. Silv., Fl. Serr. Min. 74, pl. 29. 1908; Fedde & Schust. in Just, Bot. Jahresber. 46 (2): 5. 1924; Alv. Silv., Fl. Mont. 1: 313--314 & 415, pl. 96. 1928; Stapf, Ind. Lond. 6: 248. 1931; A. W. Hill, Ind. Kew. Suppl. 8: 231. 1933; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Fedde in Just, Bot. Jahresber. 57 (2): 895. 1938; Worsdell, Ind. Lond. Suppl. 2: 426. 1941; Moldenke, Known Geogr. Distrib. Erioc. 56. 1946; Moldenke, Phytologia 2: 492. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 90 & 212. 1949; F. C. Hoehne, Pl. Aquat. 88. 1955; Moldenke, Résumé 105 & 491. 1959; Moldenke, Fifth Summ. 1: 172 (1971) and 2: 960. 1971; Moldenke, Phytologia 24: 19 (1972) and 25: 230. 1973; Moldenke, Biol. Abstr. 55: 4242. 1973; Hocking, Excerpt. Bot. A.23: 291. 1974.

Illustrations: Alv. Silv., Fl. Serr. Min. pl. 29. 1908; Alv. Silv., Fl. Mont. 1: pl. 96. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 213) "In stagnis perennibus prope Capão Redondo in Serra do Cipó", Minas Gerais, Brazil, in April of 1905 and is deposited in the Silveira herbarium. Thus far the species is known only from the original collection. It should be noted here that Wangerin (1937) erroneously cites the second illustration of this taxon to plate "86" -- actually it is on plate 96.

[to be continued]